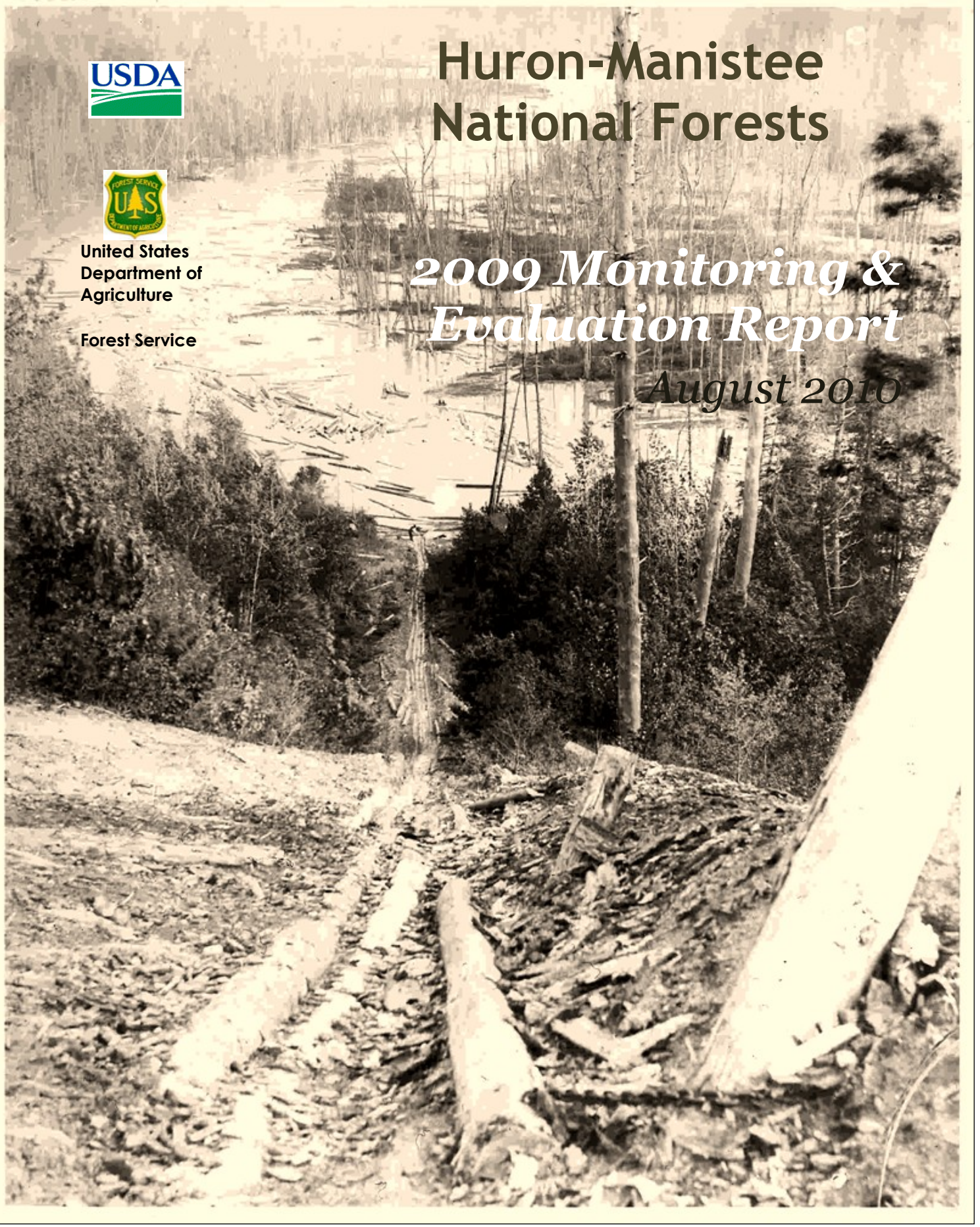


Huron-Manistee National Forests

2009 Monitoring & Evaluation Report

August 2010

United States Department of Agriculture

Forest Service

Cover Page
Udell Slide (Cadillac-Manistee Ranger District) was used in the 1900's to slide logs into the Manistee River. The logs were then floated to mills in Manistee.

Approval

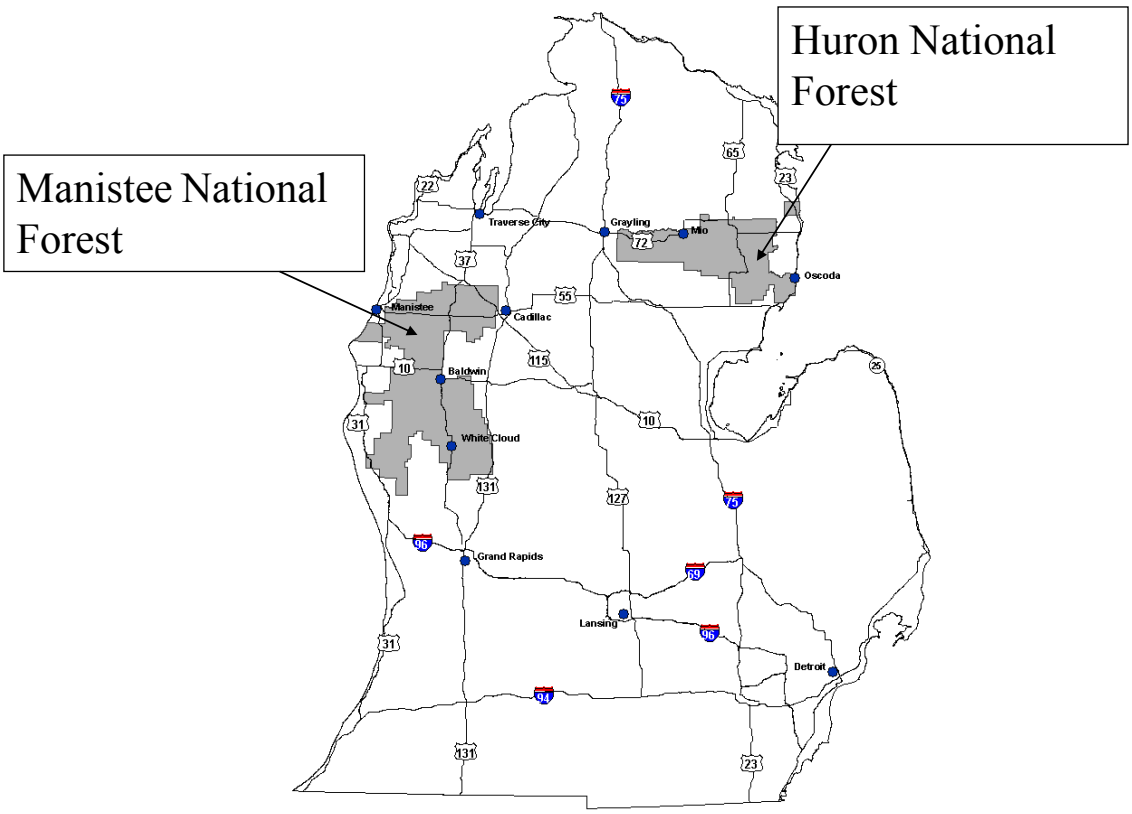
I reviewed the FY 2009 Monitoring and Evaluation Report for the Huron-Manistee National Forests. The 2006 Forest Plan was implemented on June 26, 2006. This Monitoring and Evaluation Report evaluates these results. This report meets the intent of both the Forest Plan and the regulations contained in 36 CFR 219 National Forest Management Act.

This report is approved:

Barry Paulson
Forest Supervisor

Date

This page intentionally left blank


Huron National Forest
Manistee National Forest
Traverse City
Grayling
Mio
Oscoda
Manistee
Cadillac
Baldwin
White Cloud
Grand Rapids
Lansing
Detroit
75
65
23
22
72
37
55
115
10
31
131
127
96
94
25

This page intentionally left blank

Table of Contents

List of Tables

List of Figures

This page intentionally left blank

Introduction and Forest Plan Overview

The Huron-Manistee National Forests are located between the shores of Lake Michigan and Lake Huron in the northern half of the Lower Peninsula of Michigan. The approximately one-million-acre Huron-Manistee National Forests are located in a transition zone between forested lands to the north and agricultural lands to the south. The Huron-Manistee National Forests are located within fourteen Michigan Counties, including Alcona, Crawford, Iosco, Ogemaw, Oscoda, Lake, Manistee, Mason, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, and Wexford. The Forests have four ranger stations, including Cadillac-Manistee, Baldwin-White Cloud, Huron Shores, and Mio.

Forest Plan Overview

The Huron-Manistee National Forests released the Land and Resource Management Plan on March 20, 2006 with the signing of the Record of Decision. This was a revision of the Forest Plan completed in 1986. The 2006 Forest Plan provides guidance for all resource management activities occurring on the Huron-Manistee National Forests. The Forest Plan identifies management direction for the Huron-Manistee National Forests in the form of goals, objectives, desired future conditions, and standards and guidelines, all of which are based on underlying assumptions (policy, theory, data, and technology). To determine the usefulness of a Forest Plan, the National Forest Management Act (NFMA) regulations (36 CFR 219) have required regularly scheduled monitoring and evaluation.

Purpose and Scope of the Monitoring and Evaluation Report

The information gained from the Monitoring and Evaluation Report is an indicator of how well the goals, objectives, and desired future conditions of the 2006 Forest Plan have been met. At this point in implementation of the revised Forest Plan, trends, patterns, and results are not clearly defined. Explicit patterns and conclusions that would lead to changes in the Forest Plan are not expected. Rather, this report focuses more on what we monitored and how it was monitored.

The Monitoring and Evaluation Report serves several purposes, including:

- Documenting monitoring and evaluation accomplishments,
- Providing an accountability tool for monitoring and evaluation expenditures,

- Providing an assessment of the current state of the Huron-Manistee National Forests,

- Providing adaptive management feedback to Forest Supervisor of any needed changes to the 2006 Forest Plan or adjustments to management actions,

- Describing to the public how their public lands are being managed.

This document is the fourth Monitoring and Evaluation Report compiled under the 2006 Huron-Manistee National Forests Forest Plan. The Monitoring and Evaluation Report (M & E) provides an opportunity to track progress toward implementation of revised Forest Plan decisions and the effectiveness of specific management activities. The focus of the evaluation is in providing short- and long-term guidance to ongoing management. Information gained from the M & E report is used to determine how well desired conditions, goals, objectives, and outcomes of the Forest Plan have been met.

Monitoring and evaluation is described in Chapter IV of the 2006 Forest Plan and describes methods the Forests will use in measuring predicted outputs. The Forest Plan's Monitoring Plan identifies information needed to make this determination, and guides our monitoring with broad questions to be answered.

A **Monitoring Guide** has been developed from overall guidance in Chapter IV. It brings specificity to broader questions and links them to monitoring items by asking questions that are more specific. It includes a database that comprehensively describes the methodology, costs, timing, data storage location, and priority of each monitoring item. Not all items in the database are monitored annually. Some items are scheduled to be monitored less frequently and some are dependent on available funding. Each year, the Forests create a **Monitoring Schedule** that identifies and prioritizes items to be monitored that year.

In addition to monitoring items listed in the annual **Monitoring Schedule**, individual project monitoring occurs on a daily basis. **Project Monitoring** helps insure that implementation is occurring as described in project plans and decisions. Project monitoring may not result in changes to the Forest Plan, but it can affirm our approaches or encourage timely adaptation in our management activities to protect resources.

The following sections summarize results from the 2009 monitoring items. Each resource area includes the monitoring question(s) with findings, evaluations, and conclusions.

The aim of monitoring is adaptive management, which is responding to current conditions or making appropriate changes based on new information or technology. As a result, the Forest Plan may be amended or revised to adapt to new information or changed conditions. The annual Monitoring and Evaluation Report should include recommendations for remedial action, if necessary, to make management activities and their effects consistent with the Forest Plan. Specific recommendations for corrective action will depend on the risk to the resource and the type of disparity discovered.

Types of action that could be recommended include:

- **No action**—if monitoring and evaluation indicate that standards and guidelines are being followed and the results are meeting Forest plan objectives.
- **Additional monitoring**—if initial results are inconclusive or indicate a pattern of minor discrepancies between standards and guidelines and their implementation, or between expected and actual results.
- **Referral to the appropriate line officer** for action to ensure proper application of the standards and guidelines, if compliance is inconsistent.
- **Changing the projected output schedule**, if it turns out to be unachievable given funding and other constraints.
- **Revising the budget**, if anticipated costs of implementation of the Forest Plan turn out to be incorrect.
- **Amending the Forest Plan** to change, for example, the allocation of particular areas from one Land Use Designation to another, or changing one or more of the standards and guidelines.
- **Revising the Forest Plan** if major changes are warranted.

Legally Required Monitoring

Minimum monitoring and evaluation requirements have been established through the NFMA at 36 CFR 219 (1982). Some requirements provide guidance for the development of a monitoring program, while others include specific compliance requirements. The minimum legally required monitoring tasks are identified as Category 1 elements, or required monitoring, in **Chapter IV, Table IV-3 of the 2006 Forest Plan.**

Table IV-3, **Category 1** elements are shown below; some are covered in Section 1 of this document.

2006 Forest Plan, Chapter 4, Table IV-3. Monitoring Matrix. Required Monitoring Items (Category 1)

Resource Area	Monitoring Question(s)	Driver: Applicable Code of Federal Regulations (CFR)	Measurement Frequency	Evaluation/ Reporting Frequency	Precision[1] and Reliability Class
All	Is the Forest Plan still relevant?	36 CFR 219.10(g). The Forest Supervisor shall review the conditions on the land covered by the plan at least every 5 years to determine whether conditions or demands of the public have changed significantly.	5 years	5 years	A and B
All	How close are projected outputs and services to actual?	36 CFR 219.12(k) [1]. A quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan.	Annual	Annual	A
All	How close are projected costs with actual costs?	36 CFR 219.12(k) [3]. Documentation of costs associated with carrying out planned management prescriptions, compared with costs estimated in the Forest Plan.	Annual	Annual	A
Insects and Diseases	Are insects and disease organisms increasing to potentially damaging levels following management activities?	36 CFR 219.12(k) [5] [iv]. Destructive insects and disease organisms do not increase to potentially damaging levels following management activities.	5-10 years	5-10 years	B

[1] Categories of precision —
Class A: Methods appropriate for modeling or quantitative measurement. Results have a high degree of repeatability, reliability, accuracy, and precision.
Class B: Methods based on project records, personal communications, ocular estimates, paced transects, informal visitor surveys, and similar types of assessments. The degree of repeatability, reliability, accuracy, and precision are not as high as Class A methods, but they still provide valuable information.

2006 Forest Plan, Chapter 4, Table IV-3. Monitoring Matrix. Required Monitoring Items (Category 1)					
Resource Area	**Monitoring Question(s)**	**Driver: Applicable Code of Federal Regulations (CFR)**	**Measurement Frequency**	**Evaluation/ Reporting Frequency**	**Precision and Reliability Class**
Social and Economic Stability	What are the effects of Forest management being planned on land, resources, and communities adjacent to or near the National Forest? What are the effects on National Forest management from activities on nearby lands managed by other Federal or other governmental agencies or under the jurisdiction of local governments?	36 CFR 219.7(f). A program of monitoring and evaluation shall be conducted that includes consideration of the effects of National Forest Management on land, resources, and communities adjacent to or near the National Forest being planned and the effects upon National Forest management from activities on nearby lands managed by other Federal or other government agencies or under the jurisdiction of local governments. 36 CFR 219.12(k) [1]. A quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan.	Annual	Annual	A and B
Soils	Are the effects of Forest management, including prescriptions, resulting in significant changes to productivity of the land?	36 CFR 219.12 (k) [2]. Documentation of the measured prescriptions and effects, including significant changes in productivity of the land.	1-5 years	1-5 years	A and B

2006 Forest Plan, Chapter 4, Table IV-3. Monitoring Matrix. Required Monitoring Items (Category 1)					
Resource Area	**Monitoring Question(s)**	**Driver: Applicable Code of Federal Regulations (CFR)**	**Measurement Frequency**	**Evaluation/ Reporting Frequency**	**Precision and Reliability Class**
Timber	Are harvested lands adequately restocked after five years?	36 CFR 219.12(k) [5] [i]. Lands are adequately restocked as specified in the Forest Plan.	Annual	Annual	A
Timber	To what extent is timber management occurring on lands suitable for such production?	36 CFR 219.12(k) [5] [ii]. Lands identified as not suited for timber production are examined at least every 10 years to determine if they have become suited; and that, if determined suited, such lands are returned to timber production.	10 years	10 years	A
Timber	How much even-aged management (especially clearcutting) should be used, and in what forest types should it be used?	36 CFR 219.12(k) [5] [iii]. Maximum size limits for harvest areas are evaluated to determine whether such size limits should be continued.	10 years	10 years	A
Timber	Is the timber product mix and timber output at, or below, levels defined in the Timber Resource Sale Schedule?	36 CFR 219.16. Timber Resource Sale Schedule.	Annual	Annual	A

2006 Forest Plan, Chapter 4, Table IV-3. Monitoring Matrix. Required Monitoring Items (Category 1)

Resource Area	Monitoring Question(s)	Driver: Applicable Code of Federal Regulations (CFR)	Measurement Frequency	Evaluation/ Reporting Frequency	Precision and Reliability Class
Wildlife: Management Indicator Species	What are the population trends of management indicator species? What are the relationships of the population trends to habitat changes?	36 CFR 219.19(a) (6). Population trends of management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with state fish and wildlife agencies, to the extent practical.	Annual	1-5 years	A and B
All	What are the identified research needs?	36 CFR 219.28. Research needs for management of the National Forest System shall be identified during planning and periodically reviewed during evaluation of implemented plans.	Annual	5 years	A and B

Monitoring Implementation of Standards and Guidelines, Attainment of Goals and Desired Future Conditions, and Effects of Prescriptions and Management Practices

In addition to minimum or required monitoring items, discussed above, there are monitoring items that are intended to address issues brought forth through public involvement and interdisciplinary team review, including:

- **Category 2** – Attainment of goals and objectives, and desired future condition,
- **Category 3** – Implementation of standards and guidelines,
- **Category 4** – Effects of Prescriptions and management practices.

These monitoring tasks are also identified in **Table IV-3 of the Forest Plan**. Table IV-3, Category 2, 3, and 4 elements are shown below; some are covered in Section 2 of this document.

2006 Forest Plan, Chapter 4, Table IV-3. Monitoring Matrix. Desired Condition and Objective Monitoring Items (Categories 2, 3 and 4)					
Resource Area	**Monitoring Question(s)**	**Driver: Applicable Code of Federal Regulations (CFR), Forest Plan Desired Condition or Forest Plan Objective**	**Measurement Frequency**	**Evaluation/ Reporting Frequency**	**Precision and Reliability Class**
All	What Standards, Guidelines, or Objectives are not being met?	36 CFR 219.12 (k). At intervals established in the plan, implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied. Based upon this evaluation, the inter-disciplinary team shall recommend to the Forest Supervisor such changes in management direction, revision, or amendments to the Forest Plan as are deemed necessary.	Annual	Annual	A and B
Wildlife and Vegetation Management	What are the amounts, distribution, and types of available habitats?	Wildlife and Rare Plants: Provide for the sustainability of terrestrial and aquatic ecosystems at multiple scales.	Annual	1-5 years	A and B

2006 Forest Plan, Chapter 4, Table IV-3. Monitoring Matrix. Desired Condition and Objective Monitoring Items (Categories 2, 3 and 4)					
Resource Area	**Monitoring Question(s)**	**Driver: Applicable Code of Federal Regulations (CFR), Forest Plan Desired Condition or Forest Plan Objective**	**Measurement Frequency**	**Evaluation/ Reporting Frequency**	**Precision and Reliability Class**
Wildlife and Vegetation Management	Are minimum viable populations of appropriate native and desirable non-native species being maintained within the planning area?	Wildlife and Rare Plants: Maintain minimum viable populations of appropriate native and desirable non-native species within the planning area.	Annual	1-5 years	A and B
Timber, Wildlife and Fire	What mix of harvest products by timber type will be produced? What is the mix as to non-chargeable versus chargeable?	Timber Management: Sell products as the result of ecosystem restoration, fire hazard reduction, and timber management.	Annual	1-5 years	A and B
Wildlife and Watershed	How many acres of the Forest have been inventoried and classified using an approved Aquatic Ecological Classification System?	Riparian and Aquatic Resources: Base the management of the aquatic resources upon an Aquatic Ecological Classification System.	Annual	1-5 years	A and B

2006 Forest Plan, Chapter 4, Table IV-3. Monitoring Matrix. Desired Condition and Objective Monitoring Items (Categories 2, 3 and 4)					
Resource Area	**Monitoring Question(s)**	**Driver: Applicable Code of Federal Regulations (CFR), Forest Plan Desired Condition or Forest Plan Objective**	**Measurement Frequency**	**Evaluation/ Reporting Frequency**	**Precision and Reliability Class**
Wildlife and Vegetation Management	How many acres of early successional habitat in riparian areas occur on each Forest? Does this level of habitat provide adequate species viability?	Riparian and Aquatic Resources: Employ active management for early successional habitat if natural disturbance processes are not providing adequate habitat for species viability concerns.	Annual	1-5 years	A and B
Recreation	How many areas and how many acres of semiprimitive nonmotorized and motorized areas are being provided?	Recreation, Semiprimitive Areas and Access: Provide for semiprimitive nonmotorized and motorized recreational experience.	Annual	1-5 years	A
Fire	What is the distribution of National Forest System acres by fire hazard rating? How many acres in fire-dependent ecosystems and at-risk urban-rural interface and intermix areas have been reduced by at least one hazard rating class?	Wildland Fire and Fuel Management: Manage hazardous fuels in fire-dependent ecosystems and at-risk urban-rural interface and intermix areas.	Annual	1-5 years	A

2006 Forest Plan, Chapter 4, Table IV-3. Monitoring Matrix. Desired Condition and Objective Monitoring Items (Categories 2, 3 and 4).					
Resource Area	**Monitoring Question(s)**	**Driver: Applicable Code of Federal Regulations (CFR), Forest Plan Desired Condition or Forest Plan Objective**	**Measurement Frequency**	**Evaluation/ Reporting Frequency**	**Precision and Reliability Class**
Fire	What is the distribution of National Forest System acres by fire condition class? How many acres have been treated that result in an improvement of at least one fire condition class? What is the number and size of wildfires?	Wildland Fire and Fuel Management: Reduce wildland fire intensities and the number of catastrophic fires.	Annual	1-5 years	A
Non-Native Invasive Species	To what extent is forest management contributing or responding to populations of terrestrial/ aquatic non-native invasive species of concern?	Executive Order #13112; R-9 Non-Native Invasive Species Strategy.	1-5 years	1-5 years	A and B

Monitoring Forestwide Goals and Objectives

In addition to the goals and objectives identified in Table IV-3, Chapter II of the 2006 Forest Plan enumerates more goals and objectives that are available for monitoring as shown in the table below.

Forest goals are broad statements describing conditions the Huron-Manistee National Forests will strive to achieve and are enumerated in Chapter II, 2006 Forest Plan. They are not meant to be measured directly and there are no specific periods for achieving them. Forest objectives are clear and specific statements of planned results to be achieved within a stated period.

2006 Forest Plan, Chapter II, Forestwide Goals and Objectives, Health and Safety Goals.	
Goal Number	**Goal Narrative**
G-H&S-1	• Suppress wildfires using an appropriate management response, in a manner compatible with Management Area objectives. Prevention, pre-suppression and suppression activities will be based on analysis of past fire occurrence, fire intensities and values at risk.
G-H&S-2	• Encourage adequate fire prevention, fire-safe construction, and presuppression activities on private lands in wildland/urban interface fire-prone areas.
G-H&S-3	• Fire suppression activities should be the least impacting to the environment while providing for safety, but still achieve the objectives of fire suppression.
G-H&S-4	• Suppress fires occurring on private lands inside the Forests' fire protection boundary as defined under established agreements.
G-H&S-5	• Create agreements for fire detection and suppression on National Forest System lands with cooperating firefighting agencies to define suppression actions commensurate with established resource management prescriptions.

2006 Forest Plan, Chapter II, Forestwide Goals and Objectives, Health and Safety Goals (continued).	
Goal Number	**Goal Narrative**
G-H&S-6	• Fire use is suitable on National Forest System lands. Fire use will, to the extent possible, mimic natural processes to accomplish resource objectives, while protecting wilderness values and cultural, historical, and developed resources.
G-H&S-7	• Implement fuels reduction and fuelbreak projects where conditions warrant for the protection of life, property, and safety. High-risk areas adjacent to private land will receive treatment priority.
G-H&S-8	• Provide for the protection of National Forest System lands and for the property and safety of users.
G-H&S-9	• Provide for Law Enforcement and compliance patrols based on user activity and resource protection needs.
G-H&S-10	• Maintain a transportation system that meets health and safety, resource and administrative needs.

2006 Forest Plan, Chapter II, Forestwide Goals and Objectives, Relations and Partnerships Goals.	
Goal Number	**Goal Narrative**
G-PR&P-1	• Work to achieve informed public consent during development and implementation of land and resource management plans and programs.
G-PR&P-2	• Through information programs, explain the correlation of resource management direction and activities with public interests and concerns. Design programs and information based on audience analyses as well as land and resource needs.
G-PR&P-3	• Cooperate with and encourage agencies, tribes, states, counties and other partners in education and outreach.
G-PR&P-4	• Implement a public information and education program to explain areas of special significance in coordination with other public and private organizations to reduce the number, intensity, and cost of conflict-producing and resource-damaging situations.
G-PR&P-5	• Work with affected American Indian tribes in a government-to-government relationship.
G-PR&P-6	• Use a combination of personal contacts, brochures, maps, and informational signing to inform and educate users about forest management.
G-PR&P-7	• Identify and publicize resource management opportunities that will help volunteer organizations, individuals, and local communities enhance their self-sufficiency and social well-being.
G-PR&P-8	• Integrate public involvement and forest management with regional and national objectives.
G-PR&P-9	• Work to acquire public input and participation in a timely manner in developing programmatic and site-specific environmental resource management analyses.

2006 Forest Plan, Chapter II, Forestwide Goals, and Objectives, Natural Resources Goals.	
Goal Number	**Goal Narrative**
G-NR-1	• Monitor and evaluate effectiveness of management practices.
G-NR-2	• Manage designated old growth across all management areas and vegetation classes emphasizing old growth characteristics.
G-NR-3	• Integrate the Scenery Management System (see Forest Plan Appendix F-Glossary for definitions) into project-level planning.
G-NR-4	• Meet species viability needs, achieve fire hazard reduction, and accomplish fiber production from regulated (Allowable Sale Quantity) and non-regulated (non-chargeable) forestlands primarily through timber harvest.
G-NR-5	• Monitor wildlife responses to management practices using identified Management Indicator Species to determine the effects of management practices on wildlife and fish populations.
G-NR-6	• Reduce non-native invasive species infestations and prevent new invasive species from becoming established, when possible.
G-NR-7	• Wildlife and fisheries habitats and plant communities shall be managed to maintain viable populations of existing native and desired non-native species.
G-NR-8	• Maintain or improve the populations of endangered, threatened, or sensitive species or communities.
G-NR-9	• Manage the 5-mile (8 km) radius around Tippy Dam to benefit Indiana bat.
G-NR-10	• Restore and maintain savannas, prairies, dry grasslands, mesic grasslands, shrub/scrub and oak-pine barrens in areas where they were known to previously occur, to provide for habitat diversity and to meet species viability needs.
G-NR-11	• Utilize prescribed fire to meet management direction as appropriate for the ecosystems involved.

2006 Forest Plan, Chapter II, Forestwide Goals and Objectives, Natural Resources Goals (continued).	
Goal Number	**Goal Narrative**
G-NR-12	• Encourage cooperation and coordination with responsible government land and resource management agencies, tribes and partners in program management such as recreation; Wild and Scenic River and State Natural Rivers; minerals; air quality; law enforcement, fire; water quality; endangered, threatened, and sensitive species; non-native invasive species and insect and disease.
G-NR-13	• Cooperate with individuals, organizations and local, state, Tribal and federal governments to promote ecosystem health and sustainability across landscapes.
G-NR-14	• Manage riparian areas consistent with resource conditions, management objectives and designated water use. Reduce nonpoint pollution to the maximum extent feasible and protect the hydrologic functions of watersheds, including both surface and groundwater systems.
G-NR-15	• Manage vegetation within the Streamside Management Zone for late seral stages through natural successional processes emphasizing the retention of a sufficient number of trees to protect water quality and provide a source of recruitment for large wood to the adjacent aquatic system.
G-NR-16	• Monitor and measure effects at the 5th or 6th level watershed.
G-NR-17	• Manage oligotrophic lakes with 100 percent of National Forest ownership so as not to change the trophic status; allow no more than a 10-percent decline in trophic status in other oligotrophic lakes and lakes with a mesotrophic status; lakes with a eutrophic status will maintain fishable and swimmable waters.
G-NR-18	• In cooperation with permittees, favor selective treatment of vegetation in transmission line rights-of-way to improve wildlife forage.

2006 Forest Plan, Chapter II, Forestwide Goals and Objectives, Natural Resources Goals (continued).	
Goal Number	**Goal Narrative**
G-NR-19	• National Forest System lands will be available for non-surface-disturbing mineral exploration and extraction.
G-NR-20	• Mineral exploration and development occurs and is consistent with management area direction and subject to valid existing rights. Appropriate restrictions are placed in leases to protect the environment.
G-NR-21	• Protect the rights of the federal government, encourage inventory and development of federal minerals, respect state and private mineral rights, and ensure operators take reasonable and prudent measures to prevent unnecessary disturbance to the surface.
G-NR-22	• Minimize or prevent the development of pest problems. Where pest problems are unavoidable, select the solution, which provides the most benefits while meeting control objectives.
G-NR-23	• Land adjustments (purchase or exchange) will consider only the interest needed to achieve land management objectives and must satisfy one or more of the following purposes: (1) accomplish objectives of public law or regulation; (2) obtain land needed to meet demands for National Forest System resources; (3) result in more efficient land ownership patterns as indicated by reduced resource management costs.
G-NR-24	• The priority for land acquisition is to purchase lands or partial interests needed to protect endangered, threatened, and sensitive species and areas possessing unique natural environments or significant cultural resources.
G-NR-25	• Reduce the net miles of roads on the Forests by emphasizing closures of roads determined to be non-essential for resource management.
G-NR-26	• Locate administrative boundaries of recreation areas and place informative signs describing appropriate activities for the area.

2006 Forest Plan, Chapter II, Forestwide Goals and Objectives, Natural Resources Goals (continued).	
Goal Number	**Goal Narrative**
G-NR-28	• Provide for a combination of motorized and nonmotorized recreation opportunities.
G-NR-29	• Provide a variety of access opportunities for a range of user abilities consistent with management area direction and Standards and Guidelines.
G-NR-30	• Design and manage trails for a primary seasonal use, to discourage conflicting uses. Prevent motorized and nonmotorized uses from occurring at the same time during any season of the year. Trails may also have secondary uses.
G-NR-31	• Manage Off-Highway Vehicles, including snowmobiles, by designating trails or routes to minimize user conflicts and to provide for user satisfaction, resource protection and public health and safety.
G-NR-32	• Emphasize levels 1, 2 and 3 facilities for developed and dispersed recreation.
G-NR-33	• Manage National Recreation Trails, Byways, Rivers, and Wildernesses in accordance with the commitments associated with their designation.
G-NR-34	• Integrate historical, environmental and cultural information into plans, assessments, analyses and decision documents, as appropriate.
G-NR-35	• Emphasize and promote the use of carryout methods of trash disposal.
G-NR-36	• All management activities should meet or exceed the Scenic Integrity Objectives established for the Forests through the Scenery Management System.

Monitoring Forestwide Desired Future Conditions

A desired future condition is the hoped-for results to be achieved through the implementation of the Forest Plan in both the short- and long-term that will sustain ecological conditions and meet human needs, now and in the future.

2006 Forest Plan, Chapter II, Forestwide Desired Future Condition.	
Desired Future Condition Number	**Desired Future Condition Narrative**
DFC-1	• All management activities provide for safe conditions for the public and employees.
DFC-2	• Recreation management provided is compatible with the Recreation Opportunity Spectrum objectives.
DFC-3	• The North County National Scenic Trail is constructed and administered as a premier hiking and backpacking trail. The trail will highlight significant scenic, historic, natural and cultural qualities.
DFC-4	• Designated National Wild, Scenic, and Recreation Rivers are managed according to the management plan for the individual river.
DFC-5	• The total of early successional habitat less than or equal to 15 years, and open-land habitat, such as agricultural, urban development and roads, should generally not exceed 66 percent of the area within any 6th level watershed on the forests. In most cases, 6th level watersheds have an area up to 40,000 acres associated with a creek and tributary.
DFC-6	• Areas with unique character are protected.
DFC-7	• Prairies, savannas, and oak-pine barrens have been restored and maintained on approximately 10,000 acres within old-growth areas.
DFC-8	• Maintain favorable conditions of water flow and quality. Management practices will not result in a long-term decline in water quality conditions.
DFC-9	• Indiana bat, Karner blue butterfly, bald eagle, Kirtland's warbler, piping plover and Pitcher's thistle are managed according to their recovery plans.
DFC-10	• Severe and moderately eroding streambanks are restored.

2006 Forest Plan, Chapter II, Forestwide Desired Future Condition.	
Desired Future Condition Number	**Desired Future Condition Narrative**
DFC-11	• Habitat needs of riparian-dependent species are met and that habitat is maintained, especially habitat for threatened, endangered and sensitive species.
DFC-12	• The cumulative amount of streamside stabilization over time does not exceed five percent of the total shoreline length of a river system within National Forest System boundaries.
DFC-13	• In-stream large wood meets objectives stated in Table II-2, Forest Plan.

2006 Forest Plan, Chapter II, Forestwide, Desired Future Condition for Large Wood, Table II-2.	
Stream Order	**Number of Large Wood Structures per 300 Feet**
1-2	6-9 (108-160 per mile)
3-4	3-6 (54 -108 per mile)
DFC-14	• Vegetation Composition objectives for the end of the first decade are displayed in the Forest Plan, Table II-3.

2006 Forest Plan, Chapter II, Forestwide Desired Future Condition, Vegetation Composition Objectives (End of the First Decade), Table II-3.		
Vegetation Class	**Huron National Forest**	**Manistee National Forest**
	Percent	**Percent**
Aspen/Birch	16-22	10-16
Barrens and Savannas	1-3	2-5
High-Site Oaks	5-11	15-21
Lowland Conifers	2-8	0-5
Lowland Hardwoods	1-4	4-10
Long-lived Conifers	15-21	17-23
Low-Site Oaks	12-18	13-19
Northern Hardwoods	2-8	8-14
Openings	4-9	4-10
Short-lived Conifers	18-24	2-8

Monitoring Forest Plan Standards and Guidelines

Standards and Guidelines are specific technical direction for managing natural resources. They provide another link in moving toward desired conditions. Standards and Guidelines apply Forest-wide to National Forest System lands, unless more specific Management Area direction is found in Chapter III of the Forest Plan.

Standards are required limits to activities. Standards ensure compliance with laws, regulations, executive orders, and policy direction. Deviations from Standards must be analyzed and documented in Forest Plan amendments.

Guidelines are preferable limits to management actions that may be followed to achieve desired conditions. Guidelines are generally expected to be carried out. They help the Forests reach Desired Future Conditions and objectives in a way that permits operational flexibility to respond to variations over time. Deviations from Guidelines must be analyzed during project-level analysis and documented in a project decision document, but these deviations do not require a Forest Plan amendment.

FY 2009 Huron-Manistee National Forests Monitoring and Evaluation Report

This report is divided into two sections:

- **Section 1** addresses monitoring items that are required by the National Forest Management Act (NFMA), and
- **Section 2** presents the results of monitoring guided by desired future conditions, attainment of goals and objectives, implementation of standards and guidelines, and the effects of prescriptions and management practices.

Section 1 Monitoring Items Required by NFMA

Minimum monitoring and evaluation requirements have been established through the NFMA at 36 CFR 219.

All legally required monitoring tasks were accomplished during FY 2009.

Comparison of Projected and Actual Outputs and Services

How close are projected outputs and services to actual? How do actual outputs compare to those projected in the 2006 Forest Plan, Appendix D, Proposed and Probable Practices, Goods Produced, and Other Information?

Moving ecological conditions on the Huron-Manistee National Forests in the direction of desired future conditions as outlined in the Forest Plan, necessitates managing vegetation through appropriate treatments. During Forest Plan revision, vegetative treatments were projected which would achieve desired species composition, age class distribution, Forestwide goals and objectives, and desired future condition.

Specific forest management treatments or activities are projected in Appendix D of the 2006 Forest Plan, as found in the following tables:

- Table D-2. Volume by Vegetation Class Breakdown on Lands Suitable for Timber Production for the First and Second Decades.
- Table D-3. Volume by Vegetation Class Breakdown on Lands Not Suitable for Timber Production for the First and Second Decades.
- Table D-4. Acres of Proposed and Probable Silvicultural Methods in the First and Second Decades from Lands Suitable for Timber Production.
- Table D-5. Acres of Proposed and Probable Silvicultural Methods in the First and Second Decades From Lands Not Suitable for Timber Production

Unfortunately, tracking and reporting acres and timber volumes is problematic, as Forest Service corporate computer databases do not contain necessary variables in the format depicted in Table D-2 through Table D-5.

Attempts were made in fiscal years 2006 and 2007 to provide the information in the same format found in the 2006 Forest Plan tables by summarizing timber sale data. However, this hand calculation method proved to be inefficient, time consuming, and susceptible to error.

Therefore, the following tables replace Tables D-2, D-3, D-4, and D-5 listed above, displaying the data in a format which is available from Forest Service

corporate databases. Even then, in one case, it is still necessary to hand calculate data to populate one of the tables.

Tables 1 and 2 below remove the **vegetation classes**, which are unavailable by suitability (chargeable timber volume). Suitability by itself, however, is available. Actual 2006 Forest Plan board feet and cubic feet output projections remain unchanged.

Table 1. Volume on Lands Suitable for Timber Production for the First and Second Decades.

Decade 1		Decade 2	
Million Board Feet	**Million Cubic Feet**	**Million Board Feet**	**Million Cubic Feet**
910.0	1516.8	1,002	1,671.8

Table 2. Volume on Lands Not Suitable for Timber Production for the First and Second Decades.

Decade 1		Decade 2	
Million Board Feet	**Million Cubic Feet**	**Million Board Feet**	**Million Cubic Feet**
250.0	417.0	319.0	531.6

Table 3 is a combination of Table D-2 and Table D-3 and includes data by vegetation class.

Table 3. Volume by Combined Vegetation Classes on Lands Suitable and Not Suitable for Timber Production for the First and Second Decades.

Vegetation Classes	**Decade 1**		**Decade 2**	
Units	**Million Board Feet**	**Million Cubic Feet**	**Million Board Feet**	**Million Cubic Feet**
Aspen/Birch	271.0	451.7	325.0	541.7
Short- & Long-lived Conifer	604.0	1,004.5	694.0	1,157.4
Low- & High Site Oak	285.0	474.0	230.0	382.6
Mixed Hardwoods	0.0	0.0	73.0	121.7
Total Million Board Feet	1,160.0		1,322.0	
Total Million Cubic Feet		1,930.2		2,203.4

Timber volume data is not available in the format found in Table D-2 and Table D-3, Appendix D, 2006 Forest Plan. Table 4 below depicts projected timber volume and FY 2009 sold timber volume accomplishment by **vegetation class**. Assumptions were made to convert **species codes** to vegetation classes. Also, vegetation class is not available or querying capability, by suitability, necessitating combining suitable and non-suitable data.

Table 4. Sold Timber Sale Volume by Vegetation Classes on Lands Suitable and Not Suitable for Timber Production, FY 2009.

Vegetation Classes	2006 Forest Plan Average Annual Projection, Decade 1		FY 2009 Accomplishment	
Units	**Million Board Feet**	**Thousand Cubic Feet**	**Million Board Feet**	**Thousand Cubic Feet**
Aspen/Birch	27.1	45.2	6.0	10.0
Short-lived Conifer	13.0	21.7	12.1	19.7
Long-lived Conifer	47.5	79.1	31.0	51.3
Low-Site & High-Site Oak	28.5	47.4	4.7	8.3
Mixed Hardwoods	0.0	0.0	3.3	5.6
Total Million Board Feet	116.1		57.2	
Total Thousand Cubic Feet		193.4		94.9

Source: I-Web corporate database, Cut and Sold – CUTS203F. Some timber volume tables in this report are not comparative because of rounding errors and pulling of data from different sources from Forest Service corporate databases.

Table 5 and Table 6 show sale volume data for chargeable and non-chargeable timber sale volume for FYs 2006 through 2009. "Chargeable" timber refers to timber contributing Annual Sale Quantity (ASQ). Volumes from non-chargeable lands do not contribute to ASQ.

FY 2009 chargeable volume of 47.1 MMBF is about 52 percent of the 91.0 MMBF projected in the 2006 Forest Plan.

Table 5. Volume on Lands Suitable for Timber Production for FYs 2006, 2007, 2008, and 2009.

	MMBF	MCF
2006 Forest Plan Projected Average Annual Volume	91.0	151.7
FY 2006 Chargeable Volume	30.1	51.0
FY 2007 Chargeable Volume	39.6	66.0
FY 2008 Chargeable Volume	30.2	48.6
FY 2009 Chargeable Volume	**47.1**	**75.8**

Source: I-Web corporate database, PTSAR (Sale Details) – PTSR201F, FY Awarded. Some timber volume tables in this report are not comparative because of rounding errors and pulling of data from different sources in corporate databases.

Table 6. Volume on Lands Not Suitable for Timber Production for FY s 2006, 2007, 2008, and 2009.

	MMBF	MCF
2006 Forest Plan Projected Average Annual Volume	25.0	41.7
FY 2006 Non Chargeable Volume	9.7	16.2
FY 2007 Non Chargeable Volume	7.3	12.2
FY 2008 Non Chargeable Volume	7.3	12.2
FY 2009 Non Chargeable Volume	**9.3**	**15.0**

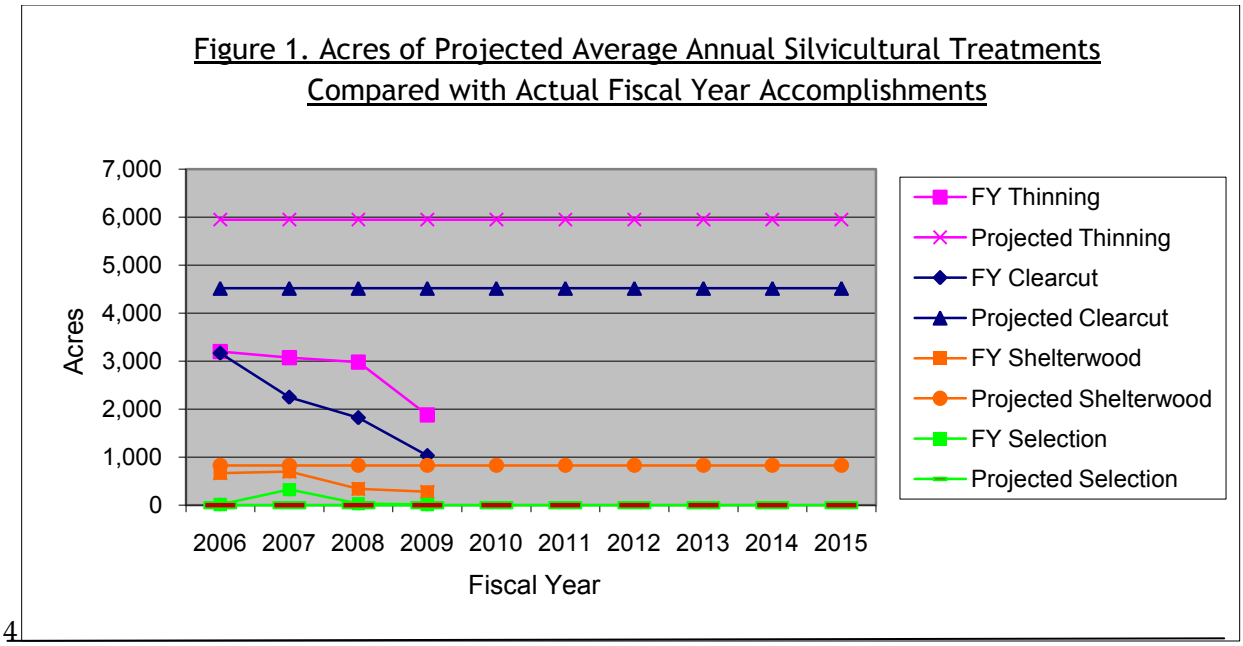
Source: I-Web corporate database, PTSAR (Sale Details) – PTSR201F, FY Awarded.

Table 7 shows acres of projected and actual silvicultural treatments accomplished. Silvicultural variables, as portrayed in the 2006 Forest Plan, Appendix D, Table D-4 are not maintained in any Forest Service corporate database (capability to query silvicultural method by vegetation class).

Table 7. Acres of Proposed and Probable Silvicultural Methods in the First Decade from Lands Suitable and Non-Suitable for Timber Production, FYs 2006, 2007, 2008 and 2009 (Table D-4, Appendix D, 2006 Forest Plan).

	Thin	Clearcut	Shelterwood	Selection	TOTAL
Average Annual Projected in the 2006 Forest Plan	5,946	4,514	826	0	11,286
Actual Accomplished / FY 2006	3,195	3,162	661	12	7,030
FY 2006 % of Forest Plan Estimate	54%	70%	80%	0	62%
Actual Accomplished / FY 2007	3,070	2,245	694	321	6,330
FY 2007 % of Forest Plan Estimate	52%	50%	84%	0	26%
Actual Accomplished / FY 2008	2,976	1,820	336	27	5,159
FY 2008 % of Forest Plan Estimate	50%	40%	41%	0	46%
Actual Accomplished / FY 2009	**1,878**	**1,032**	**274**	**10**	**3,209**
FY 2009 % of Forest Plan Estimate	**32%**	**23%**	**33%**	**0**	**28%**

Source: Source: I-Web corporate database, Table 20, Annual Reforestation and TSI Report – FACT206F, Year-end Report.



4

Figure 1 graphically represents the data in Table 7.

Table 8 shows acres of projected and actual ecological restoration treatments accomplished. Landscape variables portrayed in the 2006 Forest Plan, Appendix D, Table D-5 are not maintained in any Forest Service corporate database (capability of querying restoration activity by vegetation class). Since tracking and reporting ecological restoration efforts is very important, each Ranger District has been asked to manually track restoration accomplishment.

Table 8. Acres of Proposed and Probable Restoration Activities in the First Decade from All Lands, Fiscal Years 2006, 2007, 2008, and 2009 (Table D-5, Appendix D, 2006 Forest Plan).

Ecological Restoration Activity	Vegetation Class	Aspen/birch	Short-lived conifer	Long-lived conifer	Low-site oak	High-site oak	Northern hardwoods/ Lowland hardwoods	Non-forested Dune	Total
Create Barrens	**Projected in the Forest Plan – Average Annual**	**0**	**13**	**42**	**79**	**255**	**0**	**0**	**772**
	Accomplished FY 2006	0	80	25	0	0	0	0	105
	Accomplished FY 2007	0	0	0	0	0	0	0	0
	Accomplished FY 2008	0	0	0	297	0	0	0	297
	Accomplished FY 2009	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Create Openings	Projected in the Forest Plan – Average Annual	0	199	530	80	0	0	0	809
	Accomplished FY 2006	0	0	53	0	0	0	0	53
	Accomplished FY 2007	5	0	91	0	0	0	0	96
	Accomplished FY 2008	0	39	0	0	0	0	0	39
	Accomplished FY 2009	**0**	**121**	**0**	**0**	**0**	**0**	**0**	**121**
Old Growth to Barrens	Projected in the Forest Plan – Average Annual	0	0	0	0	0	0	0	0
	Accomplished FY 2006	0	0	56	0	0	0	0	56
	Accomplished FY 2007	0	302	0	0	0	0	0	302
	Accomplished FY 2008	0	0	0	0	0	0	0	0
	Accomplished FY 2009	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Old Growth[2] Restoration	Projected in the Forest Plan – Average Annual	0	0	0	0	0	0	0	0
	Accomplished FY 2006	0	0	295	0	0	6	48	349
	Accomplished FY 2007	110	466	53	145	0	6	89	869
	Accomplished FY 2008	146	233	107	268	213	249	125	1,341
	Accomplished FY 2009	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Source: Huron-Manistee National Forests, Individual Ranger District tracking of accomplishments.

[2] While old growth restoration acreages were not projected in the Forest Plan, Standards do provide for an undetermined amount of old growth restoration, including prescribed fire and mechanical treatments.

Table 9. Forest Plan Projected Outputs Compared to Actual Outputs for Fiscal Years 2006, 2007, 2008, and 2009 (Table D-6, Forest Plan).

Management Activity or Practice	Unit of Measure (per year)	Projected Average Annual Amount in the First Decade	FY 2006 Actual	FY 2007 Actual	FY 2008 Actual	FY 2009 Actual
Wildlife and Fish						
Manage Terrestrial Habitat	Acres	7,000	1,306	1,988	1,030	**1,376**
Manage Stream Habitat	Miles	121	33	36	35	**33**
Manage Lake Habitat	Acres	240	16	18	260	**35**
Nonnative Plant Species						
Manage Noxious Weeds	Acres	4,000	70	159	86	**643**
Range						
Manage Rangeland Vegetation	Acres	312	5	5	5	**0**
Fuels						
Hazardous Fuels Reduction and Fuelbreaks	Acres	10,000	4,546	4,804	8,050	**12,042**
Watersheds						
Maintain and Improve Watershed Condition	Acres	100	26	17	16	**98**
Facilities						
Decommission Classified and Unclassified Roads	Miles	20	10.2	3.1	.01	**54.8**
Improve Transportation System – Roads	Miles	6	.5	9.8	8.3	**9.8**
Improve Transportation System – Trails	Miles	38	8	8	7	**4**
Vegetation						
Establish Forest Vegetation	Acres	5,990	4,300	1,840	2,280	**2,180**
Improve Forest Vegetation	Acres	935	0	401	129	**786**

Source: Huron-Manistee National Forests, Program Managers (FACTS/CDW Year-end Reports).

Comparison of Actual and Estimated Costs

How close are projected costs with actual costs?

Project costs contrasted with actual costs is monitoring item required under the National Management Act (NFMA). Costs refer to the costs necessary to implement the Forest Plan and manage the Forests. This report focuses on the budget funding projected to accomplish the FY 2009 annual program of work, and how close the Forests actually came to expending the funding toward Forest Plan implementation.

Budgeted funding and expenditures were made to achieve the accomplishments described in the outputs section beginning on page 25.

Contrary to what this monitoring item suggests, management costs are not enumerated in the 2006 Forest Plan, nor is there any specific direction for costs. Implementation of the Forest Plan is calculated annually because variability of budget, personnel, materials, supplies, vehicular use, and inflation, to name a few. The Final Environmental Impact Statement analyzed key resource related costs for Forest Plan implementation, but it did not approach the level of detail necessary to consider all costs involved in managing and administering the Forests' annual program of work. The best way to demonstrate operating costs is to examine the annual budget allocations and expenditures for the Forests.

Estimated costs are made annually before the fiscal year. Table 10 portrays estimated versus actual costs for FY 2009. The program areas shown in the first column cover most of the Forests' annual operations. These operations relate to specific management goals and objectives in the Forest Plan.

Table 10. Estimated Budgeted Costs Compared with Actual Costs.

Program	Estimated Costs	Actual Costs	Balance	Balance Percentage
Inventory & Monitoring	$648,700	$686,138	-$37,438	106%
Land Management	$494,800	$466,430	$28,370	94%
Minerals & Geology	$352,900	$336,151	$16,749	95%
Forest Planning	$90,000	$96,421	-$6421	107%
Recreation, Heritage, Wilderness	$1,165,200	$1,154,282	$10,918	102%
Timber	$2,168,005	$2,266,409	-$98,404	105%
Timber Pipeline – Recreation Backlog	$780,000	$777,536	$2,464	100%
Timber Pipeline – Sale Preparation	$72,000	$37,670	$34,330	52%
Salvage Sales	$347,100	$294,822	$52,278	85%
Reforestation	$9,000	$5,455	$3,545	61%
Vegetation & Watershed	$574,200	$562,582	$11,618	98%
Watershed Reconstruction & Ecosystem Enhancement	$2,100,000	$2,100,000	$0	100%
Grazing Management	$2,300	$2,043	$257	89%
Wildlife & Fisheries	$1,123,300	$1,104,950	$18,350	98%
Burned Area Emergency Response (BAER) - Native Cool Grasses	$32,100	$33,415	-$1,315	104%
Cooperative Work – Non-agreement	$27,616	$80,551	-$52,935	292%
Forest Health – Management Federal Lands	$22,250	$22,250	$0	100%
Stewardship Contracting	$45,000	$44,092	$908	98%
Cost Recovery Lands – Major Projects	$52,000	$29,206	$22,794	56%
Cost Recovery Lands – Minor Projects	$7,800	$5,070	$2,730	65%
Rehabilitation & Restoration	$200,000	$194,031	$5,969	97%

Program	Estimated Costs	Actual Costs	Balance	Balance Percentage
Sub-Total – National Forest System	**$10,314,271**	**$10,299,504**	**$14,767**	**100%**
Fire Preparedness	$2,413,466	$2,456,853	-$43,387	102%
Hazardous Fuels Reduction	$1,384,314	$1,569,080	-$184,766	113%
Hazardous Fuels – Federal Land	$4,499,738	$1,044,055	$3,455,683	23%
Emergency Suppression & Rehabilitation (BAER)	$0	$1,642,444	-$1,642,444	164[9]%
Sub-Total – Wildland Fire Management	**$8,297,518**	**$6,712,432**	**$1,585,086**	**61%**
Administrative Facilities Maintenance	$165,000	$150,117	$14,883	91%
Legacy Road & Trail Maintenance	$260,400	$249,796	$10,604	96%
Road Maintenance & Construction	$795,600	$785,521	$10,079	99%
Road Maintenance & Decommission	$615,000	$539,991	$75,009	88%
Trail Maintenance & Recondition	$201,000	$0	$201,000	0%
Facilities Maintenance	$379,600	$369,093	$10,507	97%
Facilities Improvement/Maintenance Renovation	$1,102,000	$0	$1,102,000	0%
Maintenance of Quarters	$0	$36	-$36	3600%
Trails Improvement & Maintenance	$388,000	$393,343	-$5,343	101%
Construction Nonfederal Reimbursement	$396,311	$288,768	$107,543	73%
Recreation Deferred Maintenance	$835,000	$798,302	$36,698	96%
Deferred Maintenance	$16,000	$15,882	$118	99%
Restoration Improvements	$700	$1,216	-$516	174%
Organizational Camps	$1,000	$0	$1,000	0%
Commercial Film Local Administrative Unit	$500	$0	$500	0%
Fleet Equipment Rental	$76,238	$793,752	-$717,514	1041%
Sub-Total – Capital Improvement & Maintenance	**$5,232,349**	**$4,385,817**	**$846,532**	**80%**
Land & Water Conservation Fund	$244,000	$245,546	-$1,546	101%
Other	$405,368	$356,475	$48,893	88%
Knutsen-Vandenberg Fund	$957,103	$728,470	$228,633	76%

Program	Estimated Costs	Actual Costs	Balance	Balance Percentage
Knutsen-Vandenberg Special	$193,000	$166,813	$26,187	86%
Fee Demo - Recreation Collections	$484,300	$196,404	$287,896	41%
Recreation Maps	$35,000	$822	$34,178	2%
National Forest Scenic By-way Planning	$3,000	$2,988	$12	100%
Sub-Total – Permanent & Trust Funds	**$2,321,771**	**$1,697,518**	**$624,253**	**73%**
Federal Highway Trust Fund	$15,000	$14,960	$40	100%
Federal Highway Aquatic Passage	$240,000	$240,000	$0	100%
Federal Highway	$2,411	$0	$2,411	0%
Federal Highway – Public Roads	$5,000	$0	$5,000	0%
Federal Highway Emergency Budget Authority	$742,000	$689,647	$52,353	93%
National Forest Non-Federal Reimbursement	$82,500	$54,783	$27,717	66%
Gifts & Bequests	$14,000	$1,601	$12,399	11%
Other Proposals	$0	$2,838	-$2,838	283800%
Sub-Total – Other Funds	**$1,100,911**	**$1,003,829**	**$97,082**	**91%**
TOTAL	**$27,266,820**	**$24,099,100**	**$3,167,720**	**88%**

Source: WorkPlan, Report ID Trk2a, Resource Tracking Summary by Work Code, 03/22/2010.

Evaluation and Conclusions

The Forests spent 88 percent of its budget allocation in FY 2009. However, this percentage does not include substantial funding for projects under the American Recovery and Reinvestment Act (ARRA). Since ARRA is a two-year commitment, much of the ARRA funding allocated for FY 2009 will carry over into FY 2010, including:

Table 11. American Recovery and Reinvestment Act Carryover to FY 2010.

$201,000	Trail maintenance and reconditioning
$1,102,000	Facilities improvement/ maintenance renovation
$3,455,683	Hazardous fuel reduction
$4,758,683	TOTAL ARRA two-year funding, FY 2009- FY2010

If the Forests had been able to use more of the ARRA funding in FY 2009, we would have been closer to the total program budget allocations.

The amount of expenditures indicates the Forests estimated funding was adequate to accomplish most of the program-of-work, indicating the Forests were within their budget allocated by Congress.

Effects of Forest Management on Land, Resources, and Communities Adjacent to or Near the National Forests

What are the effects of forest management being planned on land, resources, and communities adjacent to or near the Huron-Manistee National Forests?

The federal government makes payments to states to cover some of the cost of local government services on tax-exempt National Forest System lands and, subsequently, states pass those payments on to the counties in which National Forests are located.

"Payments in Lieu of Taxes" (PILT) are federal payments to local governments that help offset losses in property taxes due to nontaxable federal lands within their boundaries. PILT payments are calculated and made by the Department of Interior, Bureau of Land Management. These payments are appropriated annually by Congress based on available funding and formulas that take into account the population in the affected counties, the number of acres of federal land in those counties, and other payments received by the counties based on federal land payments. PILT payments help local governments carry out such vital services as firefighting and police protection, construction of public schools and roads, and search-and-rescue operations. PILT payments are one of the ways that the federal government fulfills its role of being a good neighbor to local communities.

Payments are also made to states amounting to 25 percent of gross receipts from activities on National Forests, such as timber sales, mining, special uses and recreation. Congress passed the Secure Rural Schools and Community Self-Determination Act (SRS) in 2000, which allowed counties to choose a level payment based on the high-three year average of 25 percent payments, or to continue to receive 25 percent of the current year's receipts. On the Huron-Manistee National Forests, Alcona, Crawford, Montcalm, Ogemaw, and Oscoda Counties opted for the level payment. Iosco, Lake, Manistee, Mason, Mecosta, Muskegon, Newaygo, Oceana, and Wexford Counties continued with the payment based on current annual receipts.

On October 3, 2008, the Secure Rural Schools and Community Self-Determination Act of 2000 was reauthorized as part of Public Law 110-343. The new Secure Rural Schools Act has some significant changes. To implement the new law, the Forest Service requested states and counties to elect either to receive a share of the 25-percent rolling average payment or to receive a share of the Secure Rural Schools State (formula) payment by November 14, 2008 (county elections). A county electing to receive a share of the State payment also was requested to allocate between 15 to 20-percent of its share for one or more of the

following purposes: projects under Title II of the Act; projects under Title III; or the Treasury of the United States (county allocations).

The following Table 11 shows the breakdown of 25% Funds, SRS, and PILT payments for FY 2009.

Table 12. Payments to Counties.

County	Acres	25% Fund	SRS	Acres - PILT	PILT
Alcona	114,742	$85,805.33	$0.00	51,877	$63,783
Crawford	38,447	$0.00	$108,203.65	33,252	$53,953
Iosco	114,135	$85,278.45	$0.00	60,399	$99,218
Lake	112,437	$71,629.47	$0.00	74,442	$160,098
Manistee	87,701	$0.00	$191,929.26	59,582	$128,432
Mason	60,703	$38,670.91	$0.00	45,292	$98,394
Mecosta	3,459	$0.00	$8,823.62	1,856	$3,908
Montcalm	1,760	$0.00	$5,671.74	1,761	$3,509
Muskegon	12,547	$7,993.23	$0.00	11,819	$26,098
Newaygo	111,356	$0.00	$261,066.62	67,962	$145,097
Oceana	53,342	$33,973.92	$0.00	32,760	$69,961
Ogemaw	20,183	$0.00	$54,897.19	5,901	$1,926
Oscoda	154,534	$0.00	$403,035.06	76,587	$98,949
Wexford	96,992	$61,721.28	$0.00	56,125	$119,152
TOTAL	981,535	$385,072.59	$1,033,627.14	579,615	$1,029,794.00

Source: W.S. Department of Interior, Payments in Lieu of Taxes (PILT) County Payments and Acres; Website: http://www.nbc.gov/pilt/pilt/search.cfm.
Forest Service, Draft Payment Detail Report PNF, All Services Receipts (ASR-10-02) – 25% Fund and SRS: http://www.fs.fed.us/srs/county2009.shtml.

Evaluation and Conclusions

Towns are sent information regarding payments as soon as it is released.

Recommendations

Towns will continue receiving the status of Payments to Counties legislation as well as the yearly appropriations.

Lands are Adequately Stocked

Are harvested lands adequately restocked after five years?

National Forest Management Act regulations require cutover lands to be adequately restocked within five years. Regeneration occurs naturally (typically aspen), or by planting (red pine) or seeding (jack pine).

Stocking surveys were conducted on 2,899 acres in FY 2009. Acres that do not have adequate stocking will be reexamined and a determination made as to which of these lands are necessary to reforest. (Source: FACTS Query Activity Data View, Web Report: Activity Code 4341, Stocking Surveys).

Evaluation and Conclusions

In FY 2009, 4,825 acres were certified as satisfactorily stocked. Table 13 indicates the classifications of the certifications.

Table 13. Acres of Land Certified as Satisfactorily Stocked.

Type of Regeneration	Acres
Natural Regeneration with Site Preparation	394
Natural Regeneration without Site Preparation	3,530
Planted Areas	901
Seeded Areas	0
Total	4,825

Source: FACTS Web Report: Table 21, Certification of Reforestation and TSI acres.

Timber Product Mix, Timber Resource Sale Schedule

Is the timber product mix and timber output at, or below, levels defined in the Timber Resource Sale Schedule?

1986 Forest Plan History

The **1986 Forest Plan** set a maximum Allowable Sale Quantity (ASQ) of 82.2 MMBF (million board feet) per year for the first decade and 123.6 MMBF for the second decade.

For the 20-year period of the 1986 Forest Plan, fiscal years 1986-2005, the sold volume was 1,213 MMBF, or approximately 74 percent of the first decade ASQ. The Forests have not exceeded the ASQ, or the demand for timber.

2006 Forest Plan

The **2006 Forest Plan** established an allowable sale quantity (ASQ) of 91 MMBF per year for the first decade and 100.2 MMBF for the second decade.

In FY 2009, the Huron-Manistee National Forests sold 92,797 CCF of timber (approximately 57.5 MMBF). The 57.5 MMBF is 63 percent of the ASQ.

Harvest volume in FY 2009 was 41.7 MMBF, or 46 percent of the ASQ.

In FY 2009, sawtimber accounted for approximately 27 percent of the total Forests' timber output and pulpwood accounted for 73 percent (timber from suitable and not suitable land). The 2006 Forest Plan projected 55 percent sawtimber and 45 percent pulpwood (decade 1).

Table 14. Projected Average Annual Sawtimber and Pulpwood Volume Sold from All Land, Fiscal Years 2006, 2007, 2008, and 2009.

	Aspen/Birch	Hardwood	Softwood	Total
Forest Plan Projection – SAWTIMBER Average Annual Sold	6.3	18.8	25.4	50.5
Forest Plan Projection – PULPWOOD Average Annual Sold	20.8	3.5	16.2	40.5
FY 2006 SAWTIMBER Sold	1.7	1.2	8.5	11.4
FY 2006 PULPWOOD Sold	3.4	3.6	16.0	23.0
FY 2007 SAWTIMBER Sold	1.8	2.9	8.3	13.0
FY 2007 PULPWOOD Sold	2.2	4.9	23.0	30.1
FY 2008 SAWTIMBER Sold	.8	1.4	6.6	8.8
FY 2008 PULPWOOD Sold	2.0	10.5	16.0	28.5
FY 2009 SAWTIMBER Sold	**1.5**	**.8**	**13**	**15.3**
FY 2009 PULPWOOD Sold	**3.5**	**9.9**	**27.4**	**40.9**

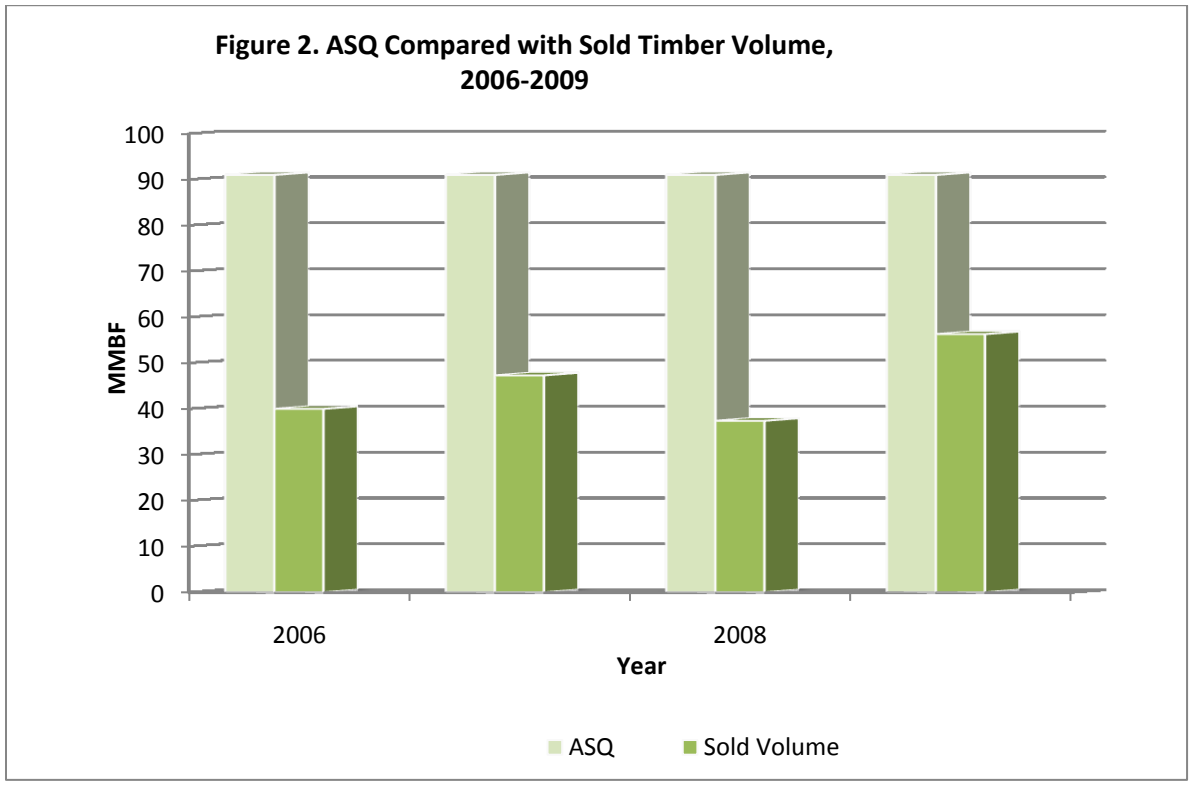
Source: I-Web corporate database, Cut and Sold (New) – CUTS203F. Totals do not necessarily equal those found in other tables because of source and rounding.

Table 15. Sold Timber Volumes (MMBF).

Fiscal Year	Sold (MMBF)
2006	40.0
2007	47.3
2008	37.5
2009	**56.3**

Source: I-Web corporate database, Cut and Sold (New) – CUTS203F.

Figure 2 below compares sold timber volume with Annual Sale Quantity (ASQ). Sold volume was about 62 percent of ASQ in FY 2009.



Evaluation and Conclusions

The timber market in the northern Lower Peninsula mirrored what has been taking place in the Nation's and Michigan's economy. The first quarter of FY 2009 was reflective of the fourth quarter of FY 2008; lackluster. However, by January 2009, the market was in a steep decline that continued through the fourth quarter of FY 2009. Pulp, jack pine, and red pine markets were especially weak. Mills restricted quantities to be delivered and limited those loggers who were allowed to bring in material. Restrictions began to loosen somewhat in the latter part of the fourth quarter. Small operators had difficulty completing units because they could not find pulp or pine markets and could not deliver logs; landings were jammed with logs at times. These market conditions explained the few numbers of bidders per sale and the low bidding margins. All-in-all, timber markets have been very unstable. In addition, integrated timber sales (timber sales which accomplish more than one objective, such as hazardous fuel reduction or wildlife habit) have an unintended consequence of limiting the quality and quantity of timber offered to purchasers.

Recommendations

The Forests are making a conscious effort to balance timber offerings among restoration, wildlife habitat, and timber management goals.

Population Trends of Management Indicator Species – (MIS) Brook Trout and Mottled Sculpin

What are the population trends of management indicator species? What are the relationships of the population trends to habitat changes? Are minimum viable populations of appropriate native and desirable non-native species being maintained within the planning area? MIS fish species include brook trout and mottled sculpin.

The following protocol was developed in 2006 and is in the process of being implemented within budgetary constraints. A Management Indicator Habitat (MIH) approach will be used to monitor the trends of brook trout and mottled sculpin. The Wisconsin Index of Biotic Integrity (IBI; Lyons et al. 1996; Wang et al. 1997) will be used to monitor brook trout and mottled sculpin habitat and population trends. This methodology employs a Management Indicator Habitat (MIH) approach. A number of representative stations across the National Forest will be established. These representative streams will be chosen according to the following:

- Predominantly National Forest ownership within watershed – thus, any changes in the IBI can be attributed to land use practices on upstream National Forest system lands (as opposed to outside sources of variation and human disturbance beyond the control of the Forest Service).

- Small- to medium-sized, wadeable streams that can be efficiently electro-fished to obtain an accurate sampling of the entire fish population.

Application of the Wisconsin IBI on representative Management Indicator Habitat (coldwater stream ecosystems) will be done concurrently with brook trout – mottled sculpin Management Indicator Species (MIS) monitoring.

The following streams will be used for MIH and MIS purposes (Table 16). While 17 streams in seven different watersheds will be monitored, sampling will be spread out over a five-year period on a rotational basis (average of three streams per year; thus, each stream will be sampled at least three times during the 10-15 year Plan implementation).

Table 16. Streams on the Huron-Manistee National Forests serving as Management Indicator Habitat (MIH) and Brook Trout – Mottled Sculpin Management Indicator Species (MIS) Locations. MIH will be monitored using the Wisconsin Index of Biotic Integrity (IBI).

Stream	Location		
	National Forest	Watershed	County
Cedar Creek	Manistee	Big South Pere Marquette River	Newaygo
Mena Creek [1]	Manistee	Muskegon River	Newaygo
Peterson Creek	Manistee	Manistee River	Wexford/Manistee
Pine Creek [2]	Manistee	Manistee River	Manistee
Poplar Creek	Manistee	Pine River	Wexford
Douglas Creek	Huron	Au Sable River	Crawford
Blockhouse Creek	Huron	Au Sable River	Oscoda
Ninemile Creek	Huron	Au Sable River	Oscoda
Hoppy Creek	Huron	Au Sable River	Alcona/Iosco
McDonald Creek	Huron	Au Sable River	Alcona
Roy Creek	Huron	Au Sable River	Alcona
Loud Creek	Huron	Au Sable River	Alcona
Buck Creek	Huron	Tawas River	Iosco
Gordon Creek	Huron	Tawas River	Iosco
Loud Creek	Huron	Tawas River	Iosco
Indian Creek	Huron	Tawas River	Iosco
Vaughn Creek	Huron	Au Gres River	Iosco

[1] Mena Creek will be sampled upstream of the impoundment (Minnie Pond).
[2] Pine Creek will be sampled upstream of Steinberg Road.

MIS sampling stations were established on Cedar, Mena, Peterson, Pine, and Poplar Creeks over the past three years. Sampling was done by USFS personnel (electro-fishing following standardized protocols established by the Michigan Department of Natural Resources and Environment).

Brook trout and mottled sculpin were present in four of the five streams in 2009. Other species of interest captured were brown and rainbow trout. Other than Poplar Creek which supports a naturalized resident rainbow trout population, all other rainbow trout encountered were in Great Lakes accessible streams and presumed to be steelhead parr.

Table 17. Aquatic MIS population data (abundance) from established USFS sampling stations on Peterson, Pine, and Poplar Creeks, Manistee National Forest.

	Cedar Creek	Mena Creek	Peterson Creek	Pine Creek	Poplar Creek
Species					
Brook Trout	95	27	2	5	0
Mottled Sculpin	16	104	0	74	283

In addition, the Little River Band of Ottawa Indians established sampling stations in 2008 on three streams within the National Forest boundary for the purpose of monitoring long-term trends in brook trout and mottled sculpin populations. The three streams with their respective sampling stations are Sickle Creek, Lower Bear Creek, and Pine Creek. Brook trout were present in Sickle Creek and Pine Creek again in 2009, with numbers comparable to those captured in 2008. As in 2008, no brook trout were captured in Lower Bear Creek in 2009. No mottled sculpin were captured in Lower Bear Creek, some were captured in Pine Creek, and abundance was greatest in Sickle Creek. Other than presence or absence, no discernible trends are evident. However, this data set will serve as part of the baseline for long-term trend monitoring of both aquatic MIS.

Table 18. Brook trout and mottled sculpin number and catch per unit effort (CPUE) for three streams on the Manistee National Forest. Electrofish sampling was done by the Little River Band of Ottawa Indians (with assistance from Grand Valley State University).

Stream	Brook Trout		Mottled Sculpin	
	2008	**2009**	2008	**2009**
Sickle Ck	2	1	296	432
Lower Bear Ck	0	0	6	6
Pine Creek	50	14	480	14

Evaluation and Conclusions

Other than presence or absence, no long-term trend analyses of brook trout and mottled sculpin population levels were attempted from data collected over the three-year period.

Recommendations

Long-term analyses will need to be done more annual monitoring data is gathered. Continued MIS sampling should occur annually for at least ten years to develop baseline population data, and to be able to conduct long-term trend analyses. Actual population estimates will be made, where possible, for comparative purposes. Additional MIS monitoring is also planned for the other streams identified in Table 16 as time and budgets permit. In addition, the Management Indicator Habitat (MIH) methodology described in Chapter IV of the Forest Plan (Monitoring and Evaluation) should be implemented.

Population Trends of Management Indicator Species – (MIS) Ruffed Grouse

What are the population trends of management indicator species? What are the relationships of the population trends to habitat changes? Are minimum viable populations of appropriate native and desirable non-native species being maintained within the planning area? MIS wildlife species include Bald Eagle, Ruffed Grouse, Kirtland's Warbler, and Karner Blue Butterfly.

The 2006 Forest Plan identified six terrestrial wildlife species to serve as Management Indicator Species (Ruffed Grouse, Brook Trout, Mottled Sculpin, Bald Eagle, Kirtland's Warbler, Karner Blue Butterfly). These species were selected because they represent particular environmental conditions for a variety of species needing similar habitat conditions. Monitoring the quantity and quality of habitat and population trends for Management Indicator Species should help assess how well we are maintaining habitat and viability of all species.

For MIS, population estimates could be made from aerial surveys, track surveys, breeding bird surveys, nest counts, mark-recapture techniques or other population survey methods appropriate for quantifying the size of populations. However, we have inadequate staffing or funding to effectively track or monitor most MIS, or relate their status to forest management.

The Forests have collected monitoring data for a variety of habitat conditions and population trends for some MIS. Strategies and Populations Trends for Karner Blue Butterfly, Kirtland's Warbler and Bald Eagle are reported under Endangered and Threatened species. Monitoring, inventories, and data collection for Endangered or Threatened species cover Indiana Bat, Piping Plover, and Pitcher's Thistle, as well. In addition, we have worked with the Michigan Department of Natural Resources and Environment and other groups to monitor and evaluate American Marten, American Woodcock, Black Bear, Eastern Pipistrelle, Northern Goshawk, Red-shouldered Hawk, Wood Turtle and sensitive plant species.

Karner Blue Butterfly and Kirtland's Warbler monitoring results are reported under Endangered or Threatened species and Bald Eagle under Regional Forester Sensitive species.

Brook Trout and Mottled Sculpin are covered under Populations Trends of Management Indicator Species.

Ruffed Grouse are monitored by spring "drumming" count surveys, by Forest staff, volunteers, and Tribal participants. Each route of 17 to 20 "stops" (12 "stops" on Tribal survey routes) is run three times between mid-April and late May, listening away from the vehicle for 4 minutes at each permanently-marked "stop", and recording the number of drums heard. "Drums per stop" is the index of grouse drumming activity compared from route-to-route and year-to-year. HMNFs staff and volunteers monitor Buhl, North Black River, Foley Swamp, Maltby Hills, Kellogg Tower routes, Grant Township, Marilla, and Pine River Grouse Management Area (GMA) routes. Tribal surveyors assess the Wagon Wheel GMA route on National Forest Service Land (NFSL), as well as 1836 Reservation, 1855 Territory, and Thompsonville routes.

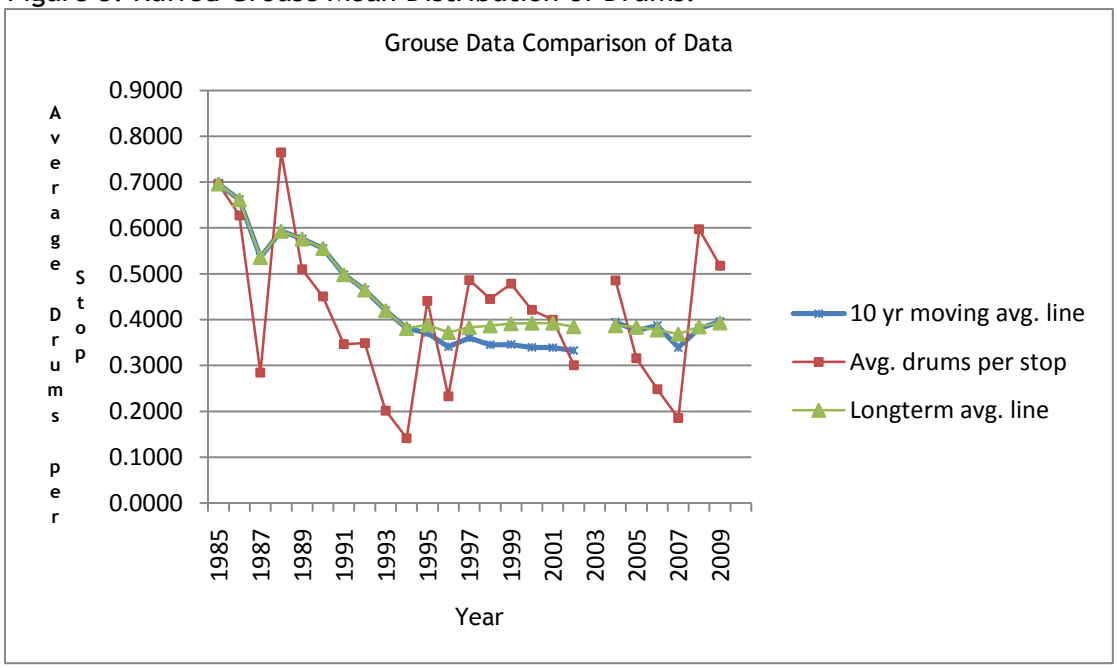
In 2009, drums per stop averaged 0.46 on Forests' routes, down from 0.75 on fewer routes in 2008.

Table 19. Ruffed Grouse Drumming Count Results, 2009.

Route	Huron NF				Manistee NF					Overall
	Buhl	N. Black River	Foley Swamp	Maltby Hills	Grant Twp.	Kellogg Tower	Marilla	Pine River	Wagon Wheel	
Drumming Heard	80	103	15	4	26	12	60	16	18	151
Stops	48	60	54	18	57	51	60	51	36	327
Drumming /Stops	1.67	1.72	0.28	0.22	0.46	0.24	1.00	0.31	0.50	0.46

Variations in numbers of grouse drums heard, between areas and years, may be due to the well-known "ten-year cycle" in ruffed grouse numbers -- oscillations are seen in this graph of drumming counts on Cadillac-Manistee Ranger District: (no counts were taken in 2003).

Figure 3. Ruffed Grouse Mean Distribution of Drums.



The data for Figure 4 is shown in Table 20.

Table 20. Ruffed Grouse Distribution Trend Data.

Year	Number of drums heard	Number of stops	Average drums per stop	Long-term average line	10 year moving average line
1985	71	102	0.6961	0.6961	0.6961
1986	64	102	0.6275	0.6618	0.6618
1987	29	102	0.2843	0.5359	0.5359
1988	78	102	0.7647	0.5931	0.5931
1989	52	102	0.5098	0.5765	0.5765
1990	82	182	0.4505	0.5555	0.5555
1991	71	205	0.3463	0.4983	0.4983
1992	90	258	0.3488	0.4649	0.4649
1993	48	238	0.2017	0.4200	0.4200
1994	32	226	0.1416	0.3811	0.3811
1995	105	238	0.4412	0.3888	0.3709
1996	51	219	0.2329	0.3724	0.3408
1997	108	222	0.4865	0.3834	0.3599
1998	57	128	0.4453	0.3866	0.3449
1999	66	138	0.4783	0.3916	0.3457

Year	Number of drums heard	Number of stops	Average drums per stop	Long-term average line	10 year moving average line
2000	40	95	0.4211	0.3926	0.3396
2001	4	10	0.4000	0.3927	0.3392
2002	74	246	0.3008	0.3849	0.3324
2003	0	0	0.0000	0.3849	0.3528
2004	33	68	0.4853	0.3872	0.3944
2005	48	152	0.3158	0.3837	0.3764
2006	36	145	0.2483	0.3777	0.3870
2007	30	162	0.1852	0.3687	0.3392
2008	154	258	0.5969	0.3846	0.3807
2009	132	255	0.5176	0.3932	0.3961

Evaluation and Conclusions

Existing information suggests that most forest vegetation type acres are consistent with projections in the 2006 Forest Plan. Less early successional habitat is being managed for Management Indicator Species, while the amount of late successional habitat for Management Indicator Species is increasing proportionally. Jack pine type is approximately 20,000 acres less than in 1986 and projected for the Year 2035. Forest data and information on jack pine type indicate a shift to short-lived oak.

Recommendations

Acreage of annual compartment exams needs to be increased to collect current vegetation data to continuously upgrade the database. The Forests need to make steady improvements in gathering better vegetation information and improving databases, on which to base future management. In addition, reliable appropriated or grant funding needs to be secured and prioritized to fund staff time and travel to accomplish populations surveys, to relate to vegetation and habitat changes in order to respond to this monitoring question.

Section 2 — Attainment of Forest Plan Goals and Implementation of Standards and Guidelines and Desired Future Conditions

Implementation of Standards and Guidelines – Fisheries Management

Are Standards and Guidelines, Goals, or Objectives being met?

Forestwide Standard — Forest management activities will not degrade long-term stream water quality below State standards.

The Michigan Department of Natural Resources and Environment (MDNRE) Surface Water Assessment Section develops standards for protection of water quality and monitors water, sediments and aquatic life to ensure viability of aquatic ecosystems, that water quality standards are being met, and that surface waters meet designated uses.

The MDNRE conducts surface water assessments on a statewide basis (by watershed) on a five-year schedule using the Great lakes Environmental Assessment "Procedure 51" (Michigan Department of Environmental Quality Water Bureau 2005). The focus is on water quality, fish, and macro-invertebrate populations. The Manistee River and Big Sable River watersheds, two systems on the Manistee National Forest, were scheduled for their respective periodic assessments in 2009. However, this sampling was dropped due to state budgetary constraints.

Results from 2006 sampling in the Muskegon River watershed (Manistee National Forest) were released in early 2010 (Michigan Department of Natural Resources and Environment 2010). Two streams within the Manistee National Forest, Bigelow and Cedar Creeks, were part of this 2006 sampling effort.

Evaluation and Conclusions

Results of macro-invertebrate community and habitat assessments at both Cedar and Bigelow Creek indicate that Michigan's water quality standards are being met.

Forestwide Goal — Manage oligotrophic lakes with 100 percent of National Forest ownership so as not to change the trophic status; allow no more than a 10-percent decline in trophic status in other oligotrophic lakes and lakes with a mesotrophic status; lakes with a eutrophic status will maintain fishable and swimmable waters.

Lakes

There is not a well-documented cause-and-effect relationship from Forest Service land management actions and changes in fish populations in lakes on the National Forests. Thus, a MIH approach will be employed for warmwater lakes (the vast majority of lakes on the National Forests) to monitor the health of these lentic ecosystems.

Warmwater lakes MIH – the trophic status of lakes will be maintained. It is proposed to use trophic status guidelines listed under 2500 Watershed – Water Quality to serve as an indicator for maintaining habitat quality for warmwater mesotrophic and eutrophic lakes. These are:

- Mesotrophic lakes - No more than a 10 percent decline in the Carlson trophic state index will be permitted for lakes with National Forest ownership.

- Eutrophic lakes with National Forest ownership will meet "fishable and swimmable" criteria contained in the Clean Water Act.

Lake water quality is a continuum progressing from very good to very poor conditions. A more precise method of describing the productivity of a lake is to use a numerical index which can be calculated directly from water quality data. A variety of indices are available with Carlson's (1977) *Trophic State Index*, or TSI, being the most widely used.

As with streams, representative lakes are being sampled. Ideally, these lakes have 100 percent National Forest ownership of the shoreline and are located in watersheds with predominantly National Forest ownership (again, to reduce the variation in sources that could contribute to any changes in the trophic status). Monitoring of these lakes is part of an ongoing statewide lake water quality assessment (LWQA) program being jointly conducted by the Michigan Department of Natural Resources and Environment (formerly administered by MDEQ) and United States Geological Survey. The Forest Service began collaborating with this effort in 2004 so that more lakes from the Huron-Manistee National Forests could be sampled and with greater frequency. This ongoing statewide lake water quality assessment program is summarized at the website: http://mi.water.usgs.gov/splan1/sp00301/cmiinland.php.

Table 21 is a list of lakes on the Huron-Manistee National Forests that are incorporated into this overall statewide monitoring program. Data contained within it are baseline data collected through the joint USGS-MDNRE lake water quality assessment program.

Table 21. Lakes on the Huron-Manistee National Forests used for Management Indicator Habitat approach through the state-wide USGS-MDNRE lake water quality assessment program. Data represent the "baseline" for trophic status against which future Forest Plan monitoring will be measured.

Lake	National Forest	Watershed	County	Year	Carlson's TI Average[1]	Trophic Status [2]
Island Lake	Huron	Au Sable	Oscoda	2004	36.406	Oligotrophic
Loon Lake	Huron	Au Sable	Oscoda	2004	34.931	Oligotrophic
Little Au Sable Lake	Huron	Au Sable	Ogemaw	2004	37.483	Oligotrophic
Sand Lake	Huron	Au Gres-Rifle	Iosco	2001, 2004	45.687	Mesotrophic
Mack Lake	Huron	Au Sable	Oscoda	2003	42.163	Mesotrophic
Sprinkler Lake	Huron	Au Sable	Alcona	2004	35.699	Oligotrophic
Wagner Lake	Huron	Au Sable	Oscoda	2004	36.937	Oligotrophic
Jewell Lake	Huron	Au Sable	Alcona	2002, 2003	41.928	Mesotrophic
Amaung Lake	Manistee	Pere Marquette	Newaygo	2003	34.752	Oligotrophic
Benton Lake	Manistee	White	Newaygo	2003	40.889	Mesotrophic
Hoags Lake	Manistee	Pere Marquette	Mason	2003	36.263	Oligotrophic
Nichols Lake	Manistee	White	Newaygo	2003	43.814	Mesotrophic
Round Lake	Manistee	Muskegon River	Mecosta	2006	46.511	Mesotrophic
Twinwood Lake	Manistee	Muskegon	Newaygo	2003	45.041	Mesotrophic
Pine Lake	Manistee	Manistee	Manistee	2004	48.164	Mesotrophic
Sand Lake	Manistee	Manistee	Manistee	2004	32.622	Oligotrophic

[1]TI = Trophic Index, a measure of the nutrient level of lakes as developed by Carlson (1977).
[2] Trophic Index values < 40 = Oligotrophic, 40-50 = Mesotrophic, > 50 = Eutrophic (very productive).

Evaluation and Conclusions

Pine Lake (Manistee National Forest) was the only lake sampled in 2008-2009 as part of the state-wide USGS-MDNRE lake water quality assessment. Based on this monitoring, its trophic index remains unchanged ("mesotrophic" or moderately productive).

Forestwide Guideline — Natural, in-stream or added wood trees, shall be left undisturbed unless it constitutes a navigational hazard. If watercraft cannot go over, under or around wood, it constitutes a navigational hazard and may be cut only to the extent necessary for navigation.

Historical records and photographs suggest that large wood in streams played an important role in the structure and function of aquatic ecosystems of watersheds of the Forests. This wood plays an important role in channel morphology, being one of the channel-forming agents. It provides habitat diversity, cover for fish, habitat for invertebrates, reptiles and other components of the aquatic food chain. Wood also adds nutrients to the aquatic system and protects streambanks during high flow events. Current-day levels of large wood in aquatic ecosystems on the Huron-Manistee National Forests are much lower due to: (1) historic, wholesale removal to facilitate log transport (log drives); (2) cutting of the pre-Euro-American forest (removal of the source for future recruitment); (3) reduced levels of recruitment from second growth riparian forests and (4) cutting to facilitate passage of recreational watercraft.

One of the challenges in river maintenance and riparian corridor management is how we look at large wood and logjams in our rivers. In the recent past, logjams were thought to be a significant problem and were completely removed from stream channels. As stated above, logjams help reduce erosion, provide habitat for fish and wildlife and are an important part of the natural processes of a river system. Now, it is recommended to leave most logjams in place. Large wood management is the process of determining what to do about wood in the river; move, remove or add, and how best to do that work.

Evaluation and Conclusions

Implementation of Forest Plan guidelines for large wood clearing in navigable streams has improved since the HMNFs and the primary river users (liveries and guides) began cooperatively clearing those log jams that are true navigation hazards two years ago. Continuation of this effort should mitigate potential cumulative effects of long-term clearing.

Implementation of Standards and Guidelines – Bald Eagle and Regional Forester Sensitive Species (RFSS)

Are management Standards and Guidelines being implemented for RFSS or their habitats?

The Forests share habitat data with MDNRE and USDI FWS. Site-specific prescriptions for RFSS are implemented, when they occur within project areas.

Bald Eagle

The Bald Eagle Management Plan, Huron-Manistee National Forests (2006); the Northern States Bald Eagle Recovery Plan (1983); and the Bald and Golden Eagle Protection Act (1940 - 16 U.S.C. 668-668d, 54 Stat. 250) guide eagle management and monitoring.

Acres treated to benefit RFSS are recorded in the FACTS database upon accomplishment, and are reported in the Wildlife, Fish and Rare Plants report. Treatments include vegetative management to achieve or set the stage for desired conditions, creation of structures (water holes, nest boxes, etc.) used by RFSS, and protective actions, including closures to human uses that interfere with RFSS use. In FY 2009, the Forests accomplished 777 acres of ETS habitat treated, managed, protected, improved or restored (including 431 acres for Kirtland's Warbler; and 346 acres for Karner Blue Butterfly, and Dusted Skipper); and 23,215 acres inventoried with partners (including approximately 4,829 ac. for Northern Goshawk and Red-shouldered Hawk; 500 ac. for Dusted Skipper and Michigan Bog Grasshopper; 1,130 ac. for Karner Blue Butterfly; 16,681 ac. for Kirtland's Warbler; 20 ac. for Black-backed Woodpecker; and 170 ac. for Piping Plover). (Some acreages overlap, so sum of sub-totals exceed total acres inventoried.)

Four non-native invasive plant species were treated in piping plover and Pitcher's thistle habitat for a total of 197 acres of treatments. Thirteen species of NNIS were treated in Indiana bat habitat, for a total of 243.2 acres of treatments. Areas treated for Indiana bat, piping plover, and Pitcher's thistle habitat overlap. Some areas were treated multiple times so actual on-the-ground acreages covered by treatments are less than the total treatment acres. Twenty-six acres of commercial thinning were conducted in ternate grape fern (*Botrychium rugulosum*) habitat.

Evaluation and Conclusions

Management Standards and Guidelines, including those directed toward protecting RFSS, are routinely implemented and applied to management prescriptions in project design.

With little direct monitoring capability (appropriated funds or positions), we have observed no significant changes in populations, status, area occupied, or response to habitat management by RFSS in 2009.

Recommendations

Continue to allocate appropriated and grant funding for habitat improvements for RFSS in WorkPlan, evaluate proposed projects under National Environmental Planning Act (NEPA) direction, record decisions to implement such projects in the Planning, Appeals and Litigation System (PALS), notify the public of such activities through the Schedule of Proposed Action (SOPA), plan and track treatments in the Forest Activity Tracking System (FACTS), and report accomplishments in the Wildlife, Fish and Rare Plant Report (WFRP).

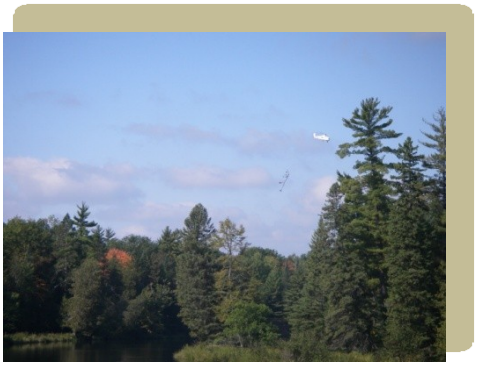
Viable Populations of Existing Native and Desired Non-native Fish Species

Are minimum viable populations of appropriate native and desirable nonnative species being maintained within the planning area?

Maintenance of viable populations of fish

Management of streams focused on improving habitat for resident and potamodromous (fish that migrate in fresh water only; Potamos is Greek for river while dromos is 'a running') coldwater species, including MIS brook trout and mottled sculpin, as well as the sensitive species found on the Huron-Manistee National Forests (lake sturgeon, greater redhorse, channel darter, and snuffbox and creek heelsplitter mussels). A total of 33 miles of stream habitat were improved. Stream habitat work included sediment basin maintenance, streambank stabilization, instream cover structure construction and repair, improvement of road-stream crossings, and large wood enhancement.

Partnerships played a vital role in the implementation of our fisheries and watershed restoration programs. Twenty nine partners contributed $470,000 toward 31 fisheries, riparian, and watershed improvement projects in 2009. Important partnership projects include:



- Cedar Creek large wood habitat restoration (Muskegon Conservation District, Michigan Department of Natural Resources and Environment).
- Little Manistee River large wood habitat restoration (Little Manistee River Watershed Conservation Council, Conservation Resource Alliance)
- Big Sable River erosion site stabilization completion (Conservation Resource Alliance)
- Au Sable River large wood restoration (Huron Pines R,C and D Council, MDNRE)
- Lake Mitchell Eurasian milfoil control (Lake Mitchell Improvement Board)

Evaluation and Conclusions

Site-specific monitoring of representative habitat improvement is ongoing. The Forests conducted stream fish population monitoring (electro-fishing) as part of evaluation of habitat improvement work on Mena Creek, Bigelow Creek, and the Middle Branch Pere Marquette River. No discernible differences in

trout population numbers were observed following pre- and post-treatment surveys at Mena Creek. Resident salmonid numbers appear to have increased at Bigelow Creek following instream habitat improvement work (primarily instream fish cover enhancement). No differences in fish population numbers were apparent at the Middle Branch Pere Marquette River sites (above and below the sediment basin).

Ongoing monitoring of the fish population in Fairchild Creek, a tributary of the Pine River system was done in FY 2009. Sampling was done below the sediment basin that is maintained on the stream.

Recommendations

Brook trout populations continue to respond well to this habitat management technique (42 lb/acre estimated standing crop) and needs to be maintained.

- **Restoration of large wood in streams —** (55 – 105 pieces per mile in large streams, 105 – 160 pieces per mile in smaller streams).

No actual counts of large wood placed in previous years as part of large scale restoration projects were done on the Au Sable or Manistee Rivers in 2009 due to budgetary and time constraints. However, a float trip was taken on the Au Sable below Alcona Dam in 2009 to note the condition and movement of trees placed in the river over the past decade.

Evaluation and Conclusions

Trees placed in the Au Sable River below Alcona Dam have weathered well and blend in with their natural surroundings. For the most part movement of trees has been consistent with what one would expect of naturally recruited trees from riparian areas (some movement over time in response to higher flow events). The addition of whole trees to the river system has benefitted the aquatic ecosystem. Anecdotal reports from anglers (primarily drift boats) state that fishing is good in association with the placed trees, both below Mio and Alcona Dams.

Recommendations

Monitoring of the movement and condition of placed large trees is required for FY 2010 for both the Manistee and Au Sable Rivers.

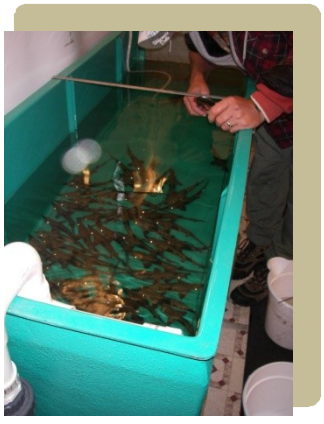
Population Trends of Regional Forester Sensitive Species (RFSS) – Lake Sturgeon, Greater Redhorse, and Channel Darter

To what extent are habitat conditions for RFSS aquatic species being maintained or improved? RFSS include seven fish, two mussels, and one insect.

Monitoring will determine the change in RFSS populations over time. Population and habitat data sources include the Michigan Department of Natural Resources and Environment, Fish and Wildlife Service, Tribes, Michigan Natural Features Inventory, and Forest Service. Suitable habitat was explicitly defined for each species through the Species Viability Evaluation (SVE) process during forest plan revision.

Lake Sturgeon

The Manistee River historically supported a large population of lake sturgeon. Because of habitat fragmentation (dams) and over-exploitation, this population has declined dramatically. This native population has historical and cultural significance to the Little River Band of Ottawa Indians. In 2009 lake sturgeon monitoring was a cooperative effort led by the Little River Band of Ottawa Indians Natural Resources Department. Other cooperators in Manistee River lake sturgeon recovery efforts include Fish and Wildlife Service, Michigan Department of Natural Resources and Environment, Forest Service, and Michigan Technological University.



Monitoring for lake sturgeon focused on assessments of larval sturgeon drift and young-of-the-year recruitment. In addition, the Little River Band operates a streamside rearing facility at Rainbow Bend Recreation Area on the Manistee River. Larval wild sturgeon are captured from the Manistee River and placed in the rearing facility. In the fall, these sturgeon are released back into the stream.

In 2009, 34 lake sturgeon in the 6-8-inch range were released. It is believed that this lifestage (juvenile) is one of the most critical in the lake sturgeon life cycle. The streamside rearing unit allows for juveniles to reach a larger size more quickly than would be attained in the river alone, thus enhancing their chances for survival.

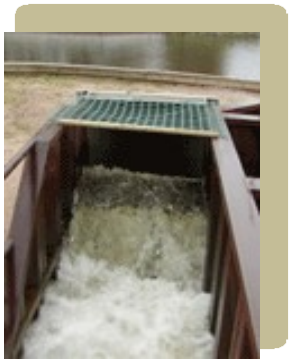
The Muskegon River, another Lake Michigan tributary that adjoins the southern part of the Manistee National Forest, also supports a remnant lake sturgeon population (O'Neal 1997; Altenritter et al. 2010). Cooperative monitoring by Grand Valley State University and the Michigan Department of

Natural Resources and Environment in 2008-2009 captured almost 40 adult lake sturgeon and observed spawning (Altenritter et al. 2010). Larval and juvenile lake sturgeon were also encountered, documenting successful reproduction and recruitment. This monitoring suggests that successful spawning by lake sturgeon occurs in the Muskegon River and that juvenile lake sturgeon utilize Muskegon Lake as a nursery habitat before entering Lake Michigan.

Greater Redhorse

Greater redhorse sucker has been documented to occur in the Pere Marquette River. Fish and Wildlife Service operates an electrical sea lamprey barrier with a fish ladder on this river in cooperation with the Michigan Department of Natural Resources and Environment. The fish ladder provides a unique opportunity to monitor fish passage.

HMNFs personnel sampled fish passage through the ladder for 13 days during May 5 through June 15, 2009. A total of 980 redhorse suckers passed through the fish-way ladder during this entire time period, with the majority being golden and silver redhorse suckers. Twenty-one (21) greater redhorse suckers were encountered in 2009. Follow-up monitoring at the weir will not occur in 2010 as it is not operational.



Channel Darter

Channel darter, *Percina copelandi,* is a State listed endangered species in Michigan. A survey by Schultz (1986) documented its occurrence in the Pine River – Van Etten Lake subwatershed of the Au Sable River watershed. Follow-up surveys in 2000-2001 verified its continued presence (Thompson et al. 2001).

Conservation measures in the 2006 Forest Plan call for periodic monitoring of known populations of channel darter (Forest Service 2006). The most recent monitoring was done in 2007. Channel darters are still present in the Pine River system, but at only one of the three sites (Schnurer and Stuber 2007).

Evaluation and Conclusions

Lake sturgeon populations in both the Manistee and Muskegon Rivers remain low, but some natural reproduction and recruitment is occurring (Chiotti et al. 2008; Altenritter et al. 2010). This is somewhat encouraging, especially when viewed from a statewide perspective. Although lake sturgeons are distributed across Michigan, it is apparent that lake sturgeon abundance is far below

historical levels and that some populations have been extirpated from rivers that historically supported spawning. There is little evidence of natural reproduction from most existing populations (Baker 2006). Natural reproduction and recruitment of lake sturgeon in both of these rivers are a significant part of the overall restoration program.

Recommendations

Defining early life characteristics, habitat preference, and monitoring relative recruitment indices will aide cooperators in continued restoration of the Manistee and Muskegon River sturgeon population. Identification of habitat and river retention time of reared juvenile sturgeon will aide in rehabilitation efforts (Mann et al. 2007).

Greater redhorse suckers are still present in the Pere Marquette River system. However, with the weir going "off-line", another mechanism will need to be employed to monitor redhorse suckers in this river system.

Monitoring of channel darter populations in the Pine River – Van Etten Lake watershed should be undertaken in the future.

Monitoring for sensitive mussel species (snuffbox, creek heelsplitter) needs to be undertaken in the future, adapting an approach developed by Dunn (2000).

Population Trends of Native and Desired Non-native Desired Species – Bald Eagle and Northern Goshawk, Regional Forester Sensitive Species (RFSS), and Woodcock

To what extent are Forest Service management activities directed toward population viability for native and desired non-native species?

Of the 142 species tracked as Regional Forester Sensitive Species (RFSS), at least 90 have Species Viability Evaluations, Conservation Assessments or Risk Evaluations completed. Additionally, Recovery or Management Plans have been prepared for all 5 Endangered or Threatened species and Critical Habitats on the Forests.

RFSS animals and plants are searched for in every botanical and wildlife survey of proposed projects. As a result of these dedicated studies and observations, we reported to Michigan Natural Features Inventory the 92 observations of 20 Regional Forester Sensitive (RFSS) or Endangered species recorded during field survey efforts conducted in Fiscal Year 2009:

- 30 occurrences of 11 RFSS Bird species, plus 2 locations of Endangered Piping Plover;
- 2 occurrences of 2 RFSS Insects, plus 6 new observations of Endangered Karner Blue Butterfly;
- 25 occurrences of 2 RFSS Plants; and
- 27 occurrences of 3 RFSS Reptile species.

Indiana Bat and Piping Plover are monitored as Endangered or Threatened species, reported elsewhere. Eastern Pipistrelle is monitored in conjunction with Indiana Bat. American Marten, Eastern Massasauga and Wood Turtle are subjects of cooperative graduate studies on the Forests. Sergej Postupalsky and associates search the Manistee National Forest for Northern Goshawk each spring. And Consumer's Energy and Little River Band of Ottawa Indians track Trumpeter Swans on project reservoirs on the Manistee and Au Sable Rivers where swans were released in 1997-1999 and 2002.

Bald Eagle

Aerial surveys of bald eagle nests continued in 2009, despite the bald eagle having been down-listed from "Threatened" to "Regional Forester Sensitive" in late 2007. "ETS Conservation Strategies" outlines protocols for cooperative surveys conducted in coordination between volunteer Jerry Weinrich (retired MDNRE), the Forests, MDNRE, Fish and Wildlife Service, and Dr. Bill Bowerman of Clemson University. Aerial surveys of bald eagle nesting pairs

and nest territories annually determine how many occupied bald eagle nesting territories exist on the Forests (and across the Northern Lower Peninsula). Nest searches concentrate on historic nests and likely riparian areas near lakes, wetlands and large rivers. Counts from previous years, using similar methods, are useful for qualitatively examining trends.

The number of bald eagle nest tree sites (active and < 5 yrs since active) protected by a 330 ft. no-disturbance zone during silvicultural treatment is compiled from District Biologists' data gathered during project Biological Evaluation preparation. "Closures" of occupied bald eagle territories to human intrusion are ordered each year by the Forest Supervisor, posted by Districts, and enforced by Forest Law Enforcement Officers and Forest Protection Officers.

The Forests coordinate annual aerial surveys of bald eagle nesting pairs and nest territories with MDNRE. Following guidance in the Bald Eagle Management Plan, Huron-Manistee National Forests (2006) and the Northern States Bald Eagle Recovery Plan (1983), some 75 historically-known nest locations are surveyed by air and/or ground annually.

Northern Goshawk

Seven breeding Northern Goshawk pairs (3 in Cadillac-Manistee District, 4 in Baldwin-White Cloud District), were located on Manistee National Forest by Sergei Postupalsky or District staff in 2009. Five of 15 previously- known nests and two new nests successfully fledged at least 8 young. In addition, 1 Red-shouldered Hawk nest was found on the Forests, in 8 historic and 2 new nest areas. That active nest produced two fledgling Red-shouldered Hawks this year.

Michigan's Northern Goshawk population appears to follow the 10-year cyclic fluctuations of snowshoe hare and ruffed grouse populations; the amplitude is less pronounced in the Lower Peninsula than in the Upper Peninsula and in Canada. This may be due to a more diverse prey base available in southern parts of the goshawk breeding range. Although breeding activity remains at a low level, most of the limited number of pairs which attempt breeding, manage to raise young.

Woodcock

Only 2 of 7American Woodcock singing-count routes within Proclamation boundaries were run on the Forests in 2009. Michigan DNR was unsuccessful in recruiting surveyors for 3 additional routes within the Forest. Only 1 woodcock "peent" call was heard on all Forest routes in 2009. We are unable to evaluate woodcock populations, or effects upon them of our management, from this effort, limited by funding for staffing to monitor.

Evaluation and Conclusions

With little direct monitoring capability (allocated funds or positions), we have observed no significant changes in populations, status, or area occupied by RFSS in 2009. The Western Great Lakes (WGLR) Northern Goshawk Inventory and Monitoring project, if funded and staffed here, could allow annual surveys to determine variations in goshawk presence at perhaps 2 to 9 Primary Sampling Units across these Forests. Results from other Lakes States suggest the Northern Goshawk population is widespread and relatively secure. Regional Wildlife Ecologist Dr. John Curnutt concluded from survey results in Minnesota, Wisconsin and the Upper Peninsula of Michigan that "I am confident in asserting that the goshawk population of the WGLR is at least 10,000 adults." (Curnutt, John. 2009. Conservation Assessment for Northern Goshawk *(Accipiter gentilis)* in the Western Great Lakes Region. Forest Service, Eastern Region, Milwaukee, Wisconsin. 97 pp.)

Bald eagle populations continue to increase in Michigan. The number of known occupied territories and nesting attempts has increased in the Northern Lower Peninsula. In addition to increases in territories, the number of fledglings per nest has also been increasing, in the Huron-Manistee National Forests as well. During the last 2 decades, the number of productive bald eagle territories established in and near the Huron-Manistee National Forests has increased significantly. Because of these region-wide successes, the Fish and Wildlife Service de-listed the bald eagle from its Threatened status in 2007. It will remain a Management Indicator Species, and RFSS, under the new Forest Plan.

The 321 active bald eagle nests counted in the Lower Peninsula in 2009 are a marked increase from 80 pairs, over 30 years ago. Of 75 historic territories in or near the Huron-Manistee National Forest, 70 were active in 2009, up from 15 in 1986. In 2009, the Forest produced 76 fledglings -- an average productivity of 1.52 fledglings per successful nest, Forest-wide.

Table 22. Bald Eagle FY 2009 Nesting Statistics.

2008			2009		
Prior Year Nests / Territories	67		Total Nest Territories in / near HMNFs (7 New)	75	
Prior Year Active	58	87%	Total Nests Active	70	93.3%
Total Successful Nests	47	81%	Total Successful Nests	50	71.4%
Prior Year Young	74 to 85		Total Young Produced	76	
Productivity	1.57 to 1.81		Productivity	1.52	
Prior Year Banded	20		Total Young Banded	28	

The Northern States Bald Eagle Recovery Plan goal is to have 1,200 occupied breeding territories distributed over a minimum of 16 states within Fish and Wildlife Service, Region 3. The Forests meet and surpass the planned minimum goal of 1.0 fledglings produced per year from at least 20 territories.

Recommendations

Continue to fund bald eagle surveys in cooperation with Michigan DNRE and Consumers' Energy, and northern goshawk/red-shouldered hawk nest visits by Sergej Postupalsky and cooperators. Fund surveys of population and habitat status of other RFSS in partnership with universities and conservation organizations, using both appropriated and special grant funding. The Forests would do well to track RFSS mentioned in their Biological Evaluations and Environmental Assessments through pre-NEPA surveys and post-treatment observations.

Endangered, Threatened, and Sensitive Species (ETS) – Conservation Strategies / Population Trends – Indiana Bat, Karner Blue Butterfly, Kirtland's Warbler, Piping Plover, Pitcher's Thistle

To what extent are established recovery or conservation strategies for species listed under the Endangered Species Act being implemented? What are the population trends for Piping Plover, Piping Plover critical habitat, Pitcher's Thistle, Kirtland's Warbler, Karner Blue Butterfly, and Indiana Bat?

Site checks are conducted for compliance with Forest Plan Standards and Guidelines concerning Indiana Bat (E), Karner Blue Butterfly (E), Kirtland's Warbler (E), Piping Plover (E) and its Critical Habitat, and Pitcher's Thistle (T).

Table 23. Endangered, Threatened, and Sensitive Species (ETS) and Conservation Strategies.

ETS	Conservation Strategy
Indiana Bat	The Indiana Bat Recovery Plan (USFWS, 1983) and an updated agency (USFWS) draft plan (1999) guide management and monitoring.
Karner Blue Butterfly	The Karner Blue Butterfly Recovery Plan (USFWS, 2003) guides management and monitoring
Kirtland's Warbler	The Kirtland's Warbler Recovery Plan (USFWS, 1976, updated 1985), Strategy for Kirtland's Warbler Habitat Management in Michigan (Huber et al, 2001), and Kirtland's Warbler Census Protocol (Carlson & Huber 2005) guide management and monitoring. (See Biological Opinion Monitoring Report for more detail).
Piping Plover	Critical Habitat for Piping Plovers (including 4.6 miles of Lake Michigan shoreline in Nordhouse Dunes Wilderness and Lake Michigan Recreation Area (LMRA) on the Huron-Manistee National Forests) was designated in May of 2001 (USFWS 2001). The current Recovery Plan for the Great Lakes Piping Plover, completed in September of 2003 (USFWS 2003) by the U.S. Fish and Wildlife Service, guides management and monitoring.
Pitcher's Thistle	A Draft Pitcher's Thistle Recovery Plan (USFWS, 1993) guides management and monitoring.

Indiana Bat

Prior to White-nose Syndrome concerns and new survey protocols by USDI F&WS, Dr. Allen Kurta of the Department of Biology at Eastern Michigan University and a team of graduate students inventoried bats at Tippy Dam (where Indiana Bats were found in 1994, 1999 and 2000) during the winter "hibernating" period in February (last in 2008) and the fall "swarming" period, using mist nets. This was a cooperative effort between Consumers Energy, Eastern Michigan University and the Forest Service. Mist-netting of bats using the Tippy Dam structure in August 2008 was cancelled, as was a winter 2009 hibernaculum visit, due to concerns about White-nose Syndrome and new USFWS handling guidelines that made sampling impractical.

However, in 2009 special Regional funding allowed the Baldwin-White Cloud and Cadillac-Manistee Ranger Districts to conduct acoustic surveys of bats. These surveys, conducted without contacting bats directly, provide baseline information on the species and relative abundance of bats near potential Indiana bat breeding/maternity areas of the Forest.

Karner Blue Butterfly

Two Karner Blue Butterfly (KBB) Recovery Units (RUs) are identified on Manistee National Forest. The Muskegon RU includes the Otto and White River metapopulation areas, and Newaygo RU includes the Bigelow and Brohman metapopulation areas. Currently, we monitor 79 sub-populations: 40 in Otto, 21 in White River, 4 in Brohman, 4 in Bigelow, and 10 other scattered subpopulations.

For 2009, KBB populations continue to decline on the Manistee National Forest. Efforts to prevent extirpation of the federally-listed endangered Karner blue butterfly (KBB) from the Huron-Manistee National Forests have dramatically increased since the Forest Plan was signed in 2006. To meet the recovery goals for viable KBB populations, the Forest Plan calls for restoration and maintenance of 20,300 acres of savannas/barrens within four designated KBB

metapopulation areas and essential KBB habitat within the Manistee National Forest over the next 50 years.

Table 24. Decline in KBB within Metapopulation and Other Known Areas; FY 2007, 2008, and 2009.

Metapopulation Area or Other Known KBB Area	Number of KBB Observed in 2007	Number of KBB Observed in 2008	Number of KBB Observed in 2009
White River	181	167	53
Otto	860	470	378
Brohman	0	0	0
Bigelow	0	0	0
Hayes	1,035	853	418
Adjacent Bigelow	1	0	0
Burns Lake	6	1	0
Total	2,083	1,491	849

Since 1992, hand cutting, prescribed burns, mechanical removal of vegetation (i.e., mowing, sheer cutting, masticating, bulldozing), scarification, seeding/planting, and road closures have been used to manage 1,854 acres of KBB habitat within the four metapopulation management areas.

Prescribed Burning to Create KBB Habitat

Bulldozing to Create KBB Habitat

Planting Wild Lupine Plugs

However, 1,148 out of 1,854 acres (62%) that received savanna/barrens restoration treatments were managed after 2005. Whereas management activities occurred on an average of 50 acres per year between 1992 and 2005, an average of 287 acres per year were treated between 2006 and 2009. This represents more than a five-fold increase in restoration activities.

The objective of these restoration treatments is to reduce tree density and encroachment of trees and shrubs, and promote growth of native grasses and KBB nectar plant species, especially wild lupine - the sole food source for KBB caterpillars.

Given that persistent KBB populations require abundant nectar sources and wild lupine, seeding/planting activities are essential for restoring suitable KBB habitat. With the support of partners and volunteers, the Forests were able to increase the availability of wild lupine and other nectar sources within 8 areas occupied by KBB in 2009. Partners donated seed and volunteers provided a total of 22 volunteer days (~$2,400 in contributed volunteer time) seeding 4 acres with nectar plants and planting 2.5 acres of wild lupine plugs. Over the next two decades, the Forests plan to disperse seed and plant plugs to establish 5-15% cover of wild lupine and 5-15% cover of other important nectar plants within all areas occupied by the KBB within the Manistee National Forest.

To reach the Forests' goal of restoring 20,300 acres of savannas/barrens, the Forests plan to increase the rate of restoration activities to a minimum of 400 acres of per year within the next two years, funding permitting.

Table 25. Projected Savanna/Barrens Restoration.

Year	2009	2010	2011	2012	2013
Acres by Type	200 M	400 M 200 PB	400 M 400PB 20 S/P	400 M 400 PB 40 S/P 200 Mntc	400 M 400 PB 40 S/P 600 Mntc

M =	Manual or Mechanical Removal of Woody Vegetation.
PB =	Prescribed Burn
S/P =	Seeding / Planting
Mntc =	Maintenance

Concurrent with the increase in restoration activities, the Forests also have increased their KBB monitoring effort since 2006. The Forests annually monitor the status of KBB to determine how far populations are from meeting recovery goals, and to evaluate the effectiveness of different management strategies for restoring KBB habitat. Between 2006 and 2009, the number of acres the Forests

monitored for KBB increased dramatically (298 acres in 2006, 843 acres in 2007, 812 acres in 2008, 1,130 acres in 2009) due to volunteer participation in the survey effort. This represents more than a three-fold increase in acres surveyed.

Volunteer participation in 2007, 2008, and 2009 was incredible. Twenty-two volunteers volunteered for a total of 158 days in 2007, 21 volunteers provided 123 volunteer days in 2008, and 48 volunteers helped conduct surveys for a total of 252 days in 2009. In total, individuals from numerous private and public partner organizations provided a total of 533 volunteer days (~$65,000 in contributed volunteer time). To those who supported our survey effort, **thank you** for being so generous with your time. With your support, the Forests not only met, but surpassed their monitoring goals.

With the help of volunteers, between 2006 and 2009, the Forests inventoried 1,206 acres, locating 38 new KBB subpopulations. In addition, the Forests estimated KBB abundance and assessed habitat conditions within 79 subpopulations covering 593 acres, and examined the influence of weather on KBB over-wintering survivorship by collecting hourly temperature and weekly snow depth data within 20 selected subpopulations. The Forests also conducted habitat surveys on an additional 152 acres to evaluate the effectiveness of different mechanical treatments at restoring KBB habitat.

Those participating in the 2007, 2008, and 2009 survey effort made an invaluable contribution to conserving the KBB by helping us dramatically improve our understanding of the KBB's status within the Forests, and how to restore suitable KBB habitat.

With the data collected, the Forests were able to: determine how far designated metapopulation areas within the Manistee National Forest are from meeting recovery goals; develop a habitat suitability model for KBB within the Manistee National Forest; identify high priority areas to target management; and evaluate the effectiveness of different management strategies for restoring KBB habitat. Without good information, our efforts to recover the KBB will fail.

Forest Service personnel, volunteers, and partners that have made the KBB recovery program a success were recently recognized for their achievements with the receipt of the prestigious Wings Across the Americas Award for Butterfly Conservation.

Over the last several years, individuals from numerous private and public partner organizations assisted with restoration activities and/or volunteered to assist with KBB surveys including: Michigan Department of Natural Resources and Environment, Michigan State University, Michigan State University Extension, Big Rapids High School, The Nature Conservancy, Ferris State University, Grand Valley State University, Michigan Entomological Society, Michigan Federated Garden Clubs, Michigan's Conservation Districts, Land Conservancy of West Michigan, Little River Band of Ottawa Indians, Central Michigan University, Wayne State University, Michigan Conservation Foundation, Pine River Audubon Society, Fish and Wildlife Service, Mason County Central High School, Pine River High School, Reed City High School, Williamson High School, Holton High School, Morley Stanwood Middle School, CASMAN Academy, and Fremont Christian School.

Kirtland's Warbler

The Kirtland's warbler census has been conducted annually since 1971. The year 2009 was the 39th consecutive year the census has been conducted. The 1971 census showed the Kirtland's warbler population had declined 60 percent from the 1961 census to only 201 singing males. In the fall of 1971, a committee was formed and recommended the census be conducted annually to monitor the fate of this species. In 1974, the Kirtland's Warbler Recovery Team was appointed to write a Kirtland's Warbler Recovery Plan, and immediately the Team recommended that the annual census be continued. This recommendation was later documented as one component of the Recovery Plan. This document states that the purpose of the census is to not only monitor the fate of the species, but also to provide baseline data for needed research, evaluate habitat development programs, and provide species and habitat protection from potential human impacts.

Census data provide valuable information to assist managers in protecting the species and its habitat, and lead to modification of management practices. The The Kirtland's Warbler spring census is a tool that enables managers to:

- Evaluate the warbler population relative to the recovery objective (1000 singing males for five consecutive years), to consider the need for down-listing or de-listing
- Determine the presence or absence of individuals in areas for protection purposes
- Evaluate habitat management activities (for example, plantation vs. trench and seed)
- Detect differences in occupancy, duration of use, and density of singing males between Management Areas
- Build public confidence in endangered species management
- Provide data for research

Information collected by the census is also critical to research related to this species in both its summer and winter habitats. Many researchers develop their hypothesis and request census data to test these theories.

The responsibility for coordinating the Kirtland's warbler census is vested with the Michigan Department of Natural Resources and Environment (MDNRE). Elaine Carlson, MDNRE Wildlife Biologist, coordinated the effort in 2009. Coordinating the census in Kirtland's warbler habitat within the Huron National Forest has been delegated to the Forest Service. Forest Service wildlife biologists Philip Huber and Paul Thompson provided leadership in conducting the 2009 census on National Forest lands.

In 2009, 1,813 singing males were counted in Michigan, the highest count ever recorded. This is the eighth time since 2001 that the number of singing males counted on a census exceeded the recovery goal of 1000. The 2009 count was slightly (1.2%) higher than the 1792 singing males counted in 2008.

Huron National Forest (HNF) census efforts located 589 singing male Kirtland's warblers on National Forest System lands (NFSL) in 2009, the highest number ever documented. This is 32 percent of the total singing male Kirtland's warbler population, the same as in 2008 (32 percent). The 589-male count is 40 percent higher than the Forest's minimum objective of 420 singing males in breeding habitat on NFSL. The Forest exceeded this goal once in 1995 as a result of habitat created by the Mack Lake Fire (1980), and then every year

since 2003. The success from 2003 to 2009 can be largely attributed to the Forest's efforts to create plantation habitat.

On other lands in the Lower Peninsula (mostly State), 1,191 singing males (65 percent) were counted. The census in the Upper Peninsula counted 30 singing males (1.6 percent). Eleven singing males were reported in Wisconsin, and two singing males were located in Canada near Petawawa, Ontario, almost 350 miles east/northeast of Mio, Michigan.

From 2008 to 2009, the count on the Huron National Forest increased by 23 singing males (4 percent), from 566 to 589, respectively. Acres of occupied habitat decreased from 10,521 in 2008 to 10,280 in 2009 (-2 percent). No occupied habitat was affected by wildfire in 2009.

The Huron National Forest has met its objective of providing habitat for a minimum of 420 singing males for the eighth time since the Mack Lake Burn was at peak occupancy. However, the Forest still fell short of the goal of managing for at least 16,000 acres of suitable habitat (1,600 acres annually, occupiable for 10 years; 2006 Forest Plan).

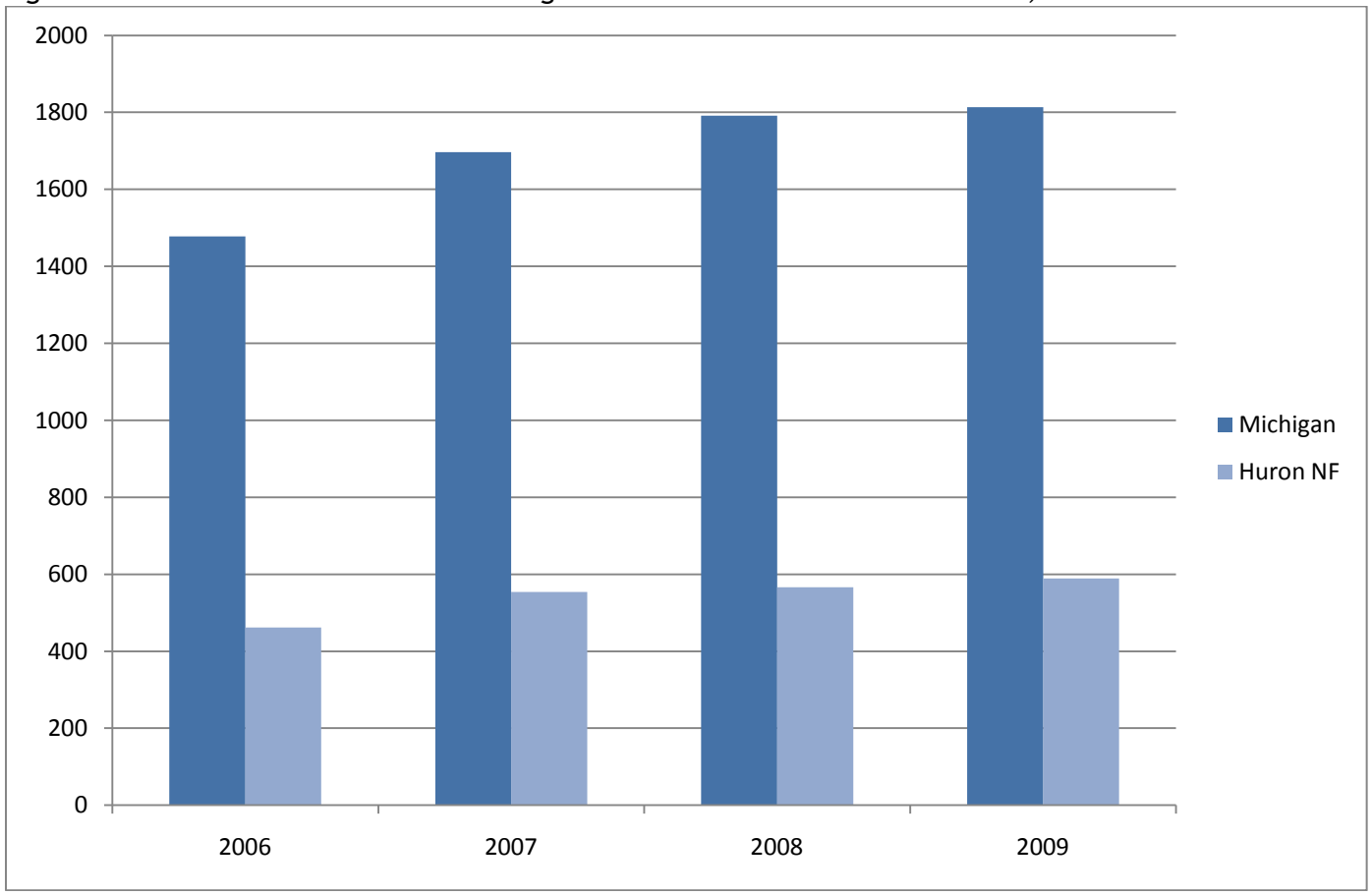
Table 26. Fiscal Year Kirtland's Warbler Census Results, Singing Males, FY 2006 – 2009.

Census Area	FY 2006	FY 2007	FY 2008	FY 2009
Eldorado KWMA	37	28	45	**41**
Big Creek KWMA	49	47	38	**29**
Jacobs Burn (USFS)			0	**2**
Mack Lake KWMA	27	47	69	**122**
ATV Burn	0	0	1	**0**
No Pablo Burn	0	3	20	**121**
Watson Rd. Burn			0	**0**
McKinley KWMA	35	43	34	**20**
Pine River KWMA	304	370	356	**337**
Tawas KWMA	10	19	24	**39**
Hagaman Burn	0	0	0	**1**
Total	462	554	566	**589**

Habitat Type	FY 2006		FY 2007		FY2008		FY 2009	
Plantation (ac. %)	429	92.9%	490	88.4%	502	88.7%	**431**	**73.2%**
Wildfires	0		6	1.1%	21	3.7%	**124**	**21.1%**
Natural Regeneration (ac. %)	33	7.1%	58	10.5%	43	7.6%	**34**	**5.8%**
Total	462		554		566		**589**	

Lower Peninsula Total	1458	1665	1758	**1783**
Upper Peninsula Total	21	32	34	**30**
Michigan Total	1479	1697	1792	**1813**

Figure 4. Huron National Forest and Michigan Kirtland's Warbler Census Results, FY 2006-FY 2009.



Piping Plover

Piping plover critical habitat on Cadillac-Manistee Ranger District was monitored in 2009 for occurrences of piping plovers. HMNF employees conducted 20 surveys in Nordhouse Dunes Wilderness, and conducted 6 surveys in the area north of the Wilderness to Cooper Creek (Lake Michigan Recreation Area, LMRA). These surveys occurred between April 27 and July 14, 2009. (See Appendix 1 for exact dates and other details). Surveys were reduced in early July, and ended in mid-July.

Five piping plovers were sighted from May 4 through July 6, 2009 during monitoring surveys.

For the second, year nesting activity was monitored on the City of Manistee's Fifth Avenue Beach. A male was observed on April 23. A second male and first female showed up on or before April 27. Eight birds in total were observed at this location. Four eggs were laid between May 16 and 22. On May 24 Forest or District personnel put up a very small psychological fence around the nest. All eggs hatched on June 16. Two chicks disappeared on June 21. Two young were banded on June 25, with the help of the banding crew from University of Michigan's Biological Station and two people from HMNF. Another young disappeared on July 2. The last young fledged on July 17.

Primary threats to piping plover include habitat alteration and destruction, predation, and disturbance by humans, particularly during the nesting season (HMNF 2002, USFWS 2003, 1988). Potential piping plover threats on the HMNF include disturbance by humans and dogs as well as predators such as gulls, eagles, raccoons, and merlins. About 6,000 people enter Nordhouse Dunes Wilderness annually via the Nurnberg Trailhead, and additional visitors may walk in from LMRA or Ludington State Park. Human use occurs primarily during May to September, overlapping the entire piping plover nesting season. Such heavy recreational use is likely to impact piping plover breeding activities, but actual effects are unknown.

The mere presence of pets (leashed or unleashed) in potential nesting areas may have a negative impact on plover nesting, and unleashed pets are considered to be a rising concern. Wilderness Forest Protection Officers estimate one in ten groups visiting the Wilderness Area has dogs, and these dogs are rarely leashed (Kelly 2004). Because areas immediately adjacent to the LMRA Campground are more accessible, they see considerably more use, and

dogs are commonly seen on the beach. Education regarding leash policy and biology of the plovers has been the major form of enforcement when unleashed pets are encountered. This approach is considered mildly effective, and law enforcement officials issue violation notices and written warnings as standard procedure for unleashed pets.

Ludington State Park does not allow dogs in beach areas. This perhaps is one reason that the State Park continues to have some nesting success, whereas similar areas of critical habitat on the HMNF are not utilized by piping plovers. Gulls, which predate piping plover eggs and chicks, are present in large numbers in both Nordhouse Dunes Wilderness and Ludington State Park. In 2009, in addition to a high number of gulls, bald eagles were observed on six separate occasions. No merlins were observed in 2009. Mammalian predator tracks were also seen on different occasions, including black bear tracks.

Loss or fluctuation of amounts of cobble beds along the shoreline is also a concern, but is largely influenced by factors out of agency control, such as Lake Michigan water levels and weather. In 2001 and 2002, cobble beds along the foredunes and associated blowouts on NFSL were larger than in 2009. In 2008 two storms changed characteristics of the beach and washed up a large quantity of driftwood and trash. In 2009 most cobble was located behind the first dune.

Pitcher's Thistle

The Cadillac-Manistee Ranger District initiated a Pitcher's thistle *(Cirsium pitcheri)* monitoring project in 1993 to track long-term trends in the population of this federally-listed Threatened species along the Lake Michigan shoreline and dune system within the Huron-Manistee National Forests.

Eight monitoring sites were established in 1993 and then sampled during the summers of 1993, 1996, 2001, and 2006. Monitoring sites are located along the Lake Michigan lakeshore and include the dune ecosystem south of Manistee, Michigan. All monitoring sites are within the Cadillac-Manistee Ranger District. Monitoring Sites 3, 4, 5, 6, and 7 are within Nordhouse Dunes Wilderness Area; Monitoring Sites 1 and 2 are within Lake Michigan Recreation Area (LMRA); and Monitoring Site 8 occurs within the northern-most extent of the Lake Michigan shoreline of the Huron-Manistee National Forests.

Populations of Pitcher's thistle on National Forest System lands (NFSL) are monitored by the Forests at a five-year interval, unless threats indicate the necessity for more frequent monitoring. This monitoring tracks population trends and age class changes over time, changes in the habitat, and other threats. The Forests anticipate monitoring again in 2011.

Evaluation and Conclusions

Conservation Strategies and Recovery Plans are in place and followed for the four Endangered and Threatened species and Critical Habitat found on the Forests. Management prescriptions and actions, including road and area closures to protect Endangered or Threatened species, comply with those Strategies and Plans, and are monitored for compliance.

Kirtland's Warbler and Piping Plover monitoring strategies seem to be working well, and populations of both seem to be increasing.

Indiana Bat surveys are limited by precautions to prevent introduction of White-nose Syndrome into our one hibernaculum, but our baseline assessment of Forest bat species has been augmented by newly-initiated acoustical surveys, especially in the "Indiana Bat Zone" of potential breeding occupancy.

Karner Blue Butterfly monitoring strategy has evolved with MDNRE and FWS cooperation, to better track populations, and we are monitoring more existing and potential occupied habitat each year. There is still much to do if we are to prevent this Endangered species from disappearing from our local landscape.

Pitcher's Thistle habitat is threatened by Non-Native Invasive Species (NNIS), especially Lombardy poplar and spotted knapweed, becoming established along the Lake Michigan shoreline. Lombardy poplar may inhibit dune processes by stabilizing them, and sprouts prolifically. Spotted knapweed has spread to previously-unaffected habitat, and competes adversely with Pitcher's Thistle. Other continuing threats that require monitoring include trampling by humans, browsing by rabbits and deer, and damage by insects.

Recommendations

Continue to fund and staff for annual surveys of Indiana Bat, Karner Blue Butterfly, Kirtland's Warbler, and Piping Plover, to monitor the species' status and evaluate effectiveness of restoration efforts.

Plan for semi-decadal surveys and assessment of Pitcher's Thistle populations and habitat in 2011, 5 years after the latest surveys in 2006.

Continue to conduct management activities to restore savanna/barrens habitats for KBB. Because of the cost and labor involved in a recovery effort of this scale, success of the Forests' management activities depends on continued recruitment of support from volunteers, partners, USDA Forest Service personnel, and other federal funding sources.

Continue to conduct management activities to maintain adequate young jack pine breeding habitat for Kirtland's Warbler, and monitor population response.

Train and orient seasonal Piping Plover monitoring personnel (temporaries, seasonals, interns, volunteers, etc.) no later than 15 April if possible, to allow daily monitoring if nests are discovered during the field season. Occasional monitoring of secondary habitat and potential nesting areas behind fore-dunes, in addition to primary habitat areas, should continue, although lack of suitable water sources in these areas makes them less likely to support nesting birds.

Restoration of Savannas, Prairies, Dry Grasslands, Mesic Grasslands, Shrub/Scrub, Oak-Pine Barrens in LTAs 1 & 2, Old Growth Areas, Use of Prescribed Fire

Have prescribed fires or other management activities for the purpose of maintaining or creating Savannas, Prairies, Dry Grasslands, Mesic Grasslands, Shrub/Scrub, Oak-Pine Barrens moved these areas toward the desired future condition?

Table 27. Acres within Fire-adapted LTAs Treated with Prescribed Fire, FY 2009.

Ranger District	Broadcast Burn	Under Burn	Wildlife Habitat Prescribed Fire	Totals
		Acres		
Baldwin - White Cloud	56	0	579	635
Cadillac - Manistee	0	0	117	117
Huron Shores	190	1,017	78	1,285
Mio	921	734	171	1,826
Huron-Manistee National Forests Total	1,167	1,751	945	3,863

Evaluation and Conclusions

Almost 3,900 acres of Savannas, Prairies, Dry Grasslands, Mesic Grasslands, Shrub/Scrub, or Oak-Pine Barrens were burned or had vegetation management activities that promoted more natural conditions or disturbance regimes. Prescribed treatments employed habitat restoration tools such as timber harvest, prescribed burning, or hand release. The purpose of prescribed burns was largely for Fuels and Restoration, in Fire Regimes 1 & 2.

Prescribed fire on the Baldwin-White Cloud Ranger District focuses on restoring Endangered Karner blue butterfly habitat. Burning on Huron Shores and Mio Districts restores fire-adapted ecosystems and protects human life, and prepares habitat for endangered Kirtland's warblers. Prescribed fire in these dry sand prairies also improves habitat for Regional Forester's Sensitive Species including pale agoseris (false-dandelion - *Agoseris glauca*), Hill's thistle (*Cirsium hillii*) and rough fescue (*Festuca altaica*).

Recommendations

The Forests are pursuing opportunities to restore savannas, prairies, dry and mesic grasslands, shrub-scrub, and oak-pine barrens, particularly in conjunction with managing habitat for endangered Karner blue butterfly and Kirtland's warbler. The pace needs to be improved in restoration of prairies in other areas for other purposes.

Private Lands Wildfire Prevention

Are there efforts to encourage adequate fire prevention, fire-safe construction and presuppression activities on private lands in wildland/urban interface fire prone areas?

Manistee National Forest

In August 2009, two Prevention Technicians were hired to work on the Manistee National Forest to promote " FIREWISE", which is a program that teaches homeowners about designing, building and/or maintaining their homes to withstand wildfire without the intervention of fire departments. It is used as a tool to meet the third requirement in developing community wildfire prevention plans (CWPP) as described in the Healthy Forests Restoration Act.

Five counties lie within the Manistee National Forest fire protection boundaries. Since Lake and Newaygo counties are currently working on CWPPs, these counties were initial focus areas. The goal is to promote the Firewise program in all counties that lie within or near our protection area. To be able to make this a success, we have joined the State and other partners in reaching this goal.

The following is a summary of progress that has been made in the development of CWPPs and the FIREWISE program:

Lake County

- Lake County's CWPP is currently being reviewed at the state level.
- Through a grant Lake County will reimburse VFD personnel to attend Firewise training and conduct home assessments.
- Current and recent Forest Service Projects within the area:
  - Baldwin Fuels Project
  - Idlewild Fuels Project
  - Big Star Lake Environmental Assessment
  - M37 Environmental Assessment

Yates Township

- Held a community Firewise presentation in Idlewild on September 4.

  Results included:
  - Contacts with community members, the Idlewild Lake Association President, and a Yates Township board member.

- Completed seven home assessments and follow-up reports.
- Scheduled public presentations in April and July.
- Photographed additional high risk areas for future training.
- Canvassed the area with Firewise prevention material.

Lake Township

- Held a community Firewise presentation in Big Star Lake area on September 26.

  Results included:
  - Contacts with community members including Lake Township VFDs and a Lake County commissioner.
  - Completed eight home assessments and follow-up reports.
  - Scheduled public presentations in April and July.
  - Photographed additional high risk areas for future training.
  - Canvassed the area with Firewise prevention material.
  - Current and recent Forest Service Projects within the area:

    Big Star lake Environmental Assessment.

Newaygo County

- Newaygo County is currently in the assessment phase of drafting their CWPP.
- Firewise and CWPP presentation made to Newaygo County Commissioners.
- Firewise presentation made to all Newaygo County Fire Chiefs.

Lilly Township

- Completed 16 home assessments on residences under Forest Service special use permits at Sawkaw and Highbank Lakes.
- Photographed additional high risk areas for future training.
- Canvassed area with Firewise prevention material.

Merrill Township

- Held informational meeting for Merrill township officials including Fire Chief.
- As a result of the meeting, preliminary dates were set for future presentations.
- Photographed additional high risk areas for future training.

- Canvassed the area with Firewise prevention material.

Manistee and Wexford Counties

- Firewise presentation made to Cherry Grove VFDs.
  - As a result of the meeting, preliminary dates were set for future home assessment training.

Addition Contacts Made

- Contacted County Councils on Aging and Five Cap concerning availability of funding for elderly, handicapped and low income residents in fuels reduction around their homes.
- Arranged a meeting with the MSU Extension, the state DNRE Prevention Specialist, to discuss potential collaboration.
  - As a result of the meeting all agreed to the following:
    - Continue to share information.
    - Collaborate on training seasonal Firewise Program employees.
    - Promote a standard Firewise message across the state.
- Introduced statewide county Red Cross Emergency coordinators to who the Forest Service is and how we operate in Michigan. Then followed up with a short Firewise presentation.
- Distributed Firewise literature to libraries in Mason, Lake and Newaygo counties.

Huron National Forest

- Distributed fire prevention brochures to all property owners in Oscoda County.
- Firewise display and fire prevention brochures at local County fairs, shows, and festivals that attract both permanent and seasonal residents and visitors to the area.
- Maintained strategically placed fire prevention signs at 28 locations with messages that reflect the seasonality of fire hazard.
- Enclosed fire prevention brochures and offer of home inspection with scoping letters where Forest Service projects are proposed in high-hazard fire areas.
- Smokey Bear appearances at local schools, parades, and County fairs.
- Fire education activities at the Sprinkler Lake education center that attracts children from the Alpena and Alcona school districts.

Evaluation and Conclusions

Manistee National Forest and Huron National Forest wildfire educational accomplishments were significant for FY 2009. The Firewise program on the MNF resulted in 240 personal contacts and 31 home assessments with follow-up documentation and scheduled four community meetings for the 2010 fire season. The Huron National Forest similarly reached many property owners with wildfire prevention message.

Recommendations

Continued emphasis, promotion, and implementation of Interagency fire prevention programs will greatly help in lessening wildfire risk and negative forest fire effects on landowners and communities in and around the National Forests.

Fire Prevention and Fire Suppression

What activities have been done to promote safe fire prevention and fire suppression?

Large catastrophic wildfires occur on a regular basis on the Huron-Manistee NFs. Approximately every five years more than 1,000 acres burn in a single fire in conifer fuel types. The Forests manage a large part of the largest contiguous area of jack pine forest in the United States. This fuel type, on sandy soils that dry quickly, generates very high fire danger in April and May. The highest fire danger occurs before and during new growth of the current year's pine needles, and a lesser extent through the summer/fall.

Smaller fires are fairly common on the Forests and these require an organized and immediate response to minimize their severity. Fire suppression response is commensurate with the hazards at risk. Minimum impact suppression tactics like water and hand tools may be all that is needed on some fires, whereas a dozer plow line and aerial resources may be needed on another. Suppression tactics are decided on by the Incident Commander on each fire. Safety of employees and public is the first objective of every wildfire response.

The Forests have an active fire prevention program. Local media, including television and radio, are provided with up-to-date fire danger information. Programs like Firesafe are provided to the public to promote involvement in activities that reduce fire risk around homes or cabins. The Forest Supervisor has decided to eliminate three fire prevention positions on the Forest and move that work to other employees. The effect of this is hard to monitor and may have future impacts over multiple years.

Line officer review of fires was accomplished with on-site review of fires on the Forests. The Forests had no large (over 65 acres) fires in 2009. The Forests had 138 fires in 2009 that had a Forest Service response. Responses involved from one fire engine responding to the scene, to multiple engines, dozers, and aircraft responding.

Prescribed burn plans and project implementation were also reviewed by line officers and fire staff. Line officer participation in after-action review discussions are accomplished for safety concerns and rating how well objectives were met.

Prescribed fire burn planning is thorough, with multiple level reviews. National, Regional, and Forest direction for burn plan format and content are done for all management-ignited burning. Aerial ignition is being used to accomplish landscape scale burning. Detailed briefings prior to implementation and After Action Reviews (AARs) are completed on all burns to acknowledge success and assess possible actions to improve burn management.

Evaluation and Conclusions

The Forests are very strong in promoting safe practices in fire suppression, fuels management, and fire prevention. Forest Leadership and firefighters have their main emphasis on personnel safety in all activities on and off the Forests.

Wildland fire suppression and prescribed burning did not result in any serious reportable accidents or injuries to personnel involved. Pre-work briefings, reviewing the specific Job Hazard Analysis, and personal attention to performing activities safely have contributed to a safe work environment.

Adequate communications are the backbone of safe fire suppression and prevention. A fully functioning Forest radio system, with back up, is paramount. Interoperability with cooperators is also essential. The Michigan Department of Natural Resources and Environment (DNRE), other federal land management agencies, Law Enforcement, and Local Fire Departments are all part of a safe and effective fire program. Coordination and cooperation has been very good.

An Annual Operating Plan is updated each year with the State of Michigan to facilitate fire fighting operations when both organizations are involved. Face to face meetings with the State are done annually to coordinate fire suppression efforts.

Recommendations

Continued emphasis on fire prevention and safe fire suppression is required to maintain the successful activities on the National Forests. Interagency cooperation, coordination, and working together will be needed to operate effectively. Line officer commitment to safety and program function will ensure a safe efficient response to wildfire prevention, preparedness, and suppression.

Distribution of Fire Condition Class

What is the distribution of National Forest System acres by fire condition class? How many acres have been treated that result in an improvement of at least one fire condition class?

Condition class change is recorded in the Forest Activity Tracking System (FACTS) as projects are completed. Forests' fuels planners determine class change by percentage based on condition change from fuel reduction and vegetation management activities.

Wildfires are suppressed with the appropriate suppression response. Minimum impact suppression tactics are used where conditions allow. Appropriate management response in suppression of fires includes using natural fuel breaks for control lines, wet line or hand line in place of dozer plow line, and the use of aviation resources. Fire fighter and public safety are always the first consideration of the fire suppression response. Rehabilitation of ground-disturbing activities done during suppression is completed on all fire areas recommended by resource advisors.

The Forests had 138 fires in 2009 affecting 211 acres. The Cedar Road Fire of June 16, 2009 burned 64 acres. No structures were burned due to a slow moving ground fire at night in closed canopy oak and pine forest.

Table 28. Huron-Manistee National Forests FY 2009 Statistical Wildfire Causes.

Cause	Fires	Percent	Acres	Percent
Lightning	1	1%	1	< 1%
Equipment	2	2%	1	1%
Smoking	1	1%	1	< 1%
Campfire	15	11%	28	13%
Debris	63	46%	33	16%
Arson	13	9%	29	14%
Children	3	2%	2	1%
Miscellaneous	40	28%	116	55%
Total	138		415	

Hazardous fuel reduction was accomplished on 5,688 acres of National Forest land. This resulted in directly improving condition class on these acres. These areas were broadcast burned, had mechanical fuel reduction activity, or received other vegetation management that lessened wildfire risk. Project areas were monitored after activity completion to confirm reduction in fuel loading and fire hazard risk. In addition, another 6,354 acres were treated by vegetation management practices, such as conifer harvest for Kirtland Warbler habitat,

wildlife opening maintenance, and conifer plantation thinning. These activities also contributed to improved condition class for these stands.

Annual Preparedness reviews are conducted on the Forests by fire staff and line officers. These include a review of prevention, presuppression, and suppression activities on the Districts.

Evaluation and Conclusions

Condition class change was accomplished on project areas moving them toward a fire regime that is within a historical range defined in terms of historic fire return interval. This means vegetation attributes (species composition and structure) are intact and ecosystems are functioning within their historical range. Cumulative effects as larger areas are treated each year add to beneficial landscape level changes across the Forests.

Annual Preparedness reviews show that District personnel are performing at a satisfactory or better level in their fire management programs. Concerns are addressed and corrected in a timely manner.

A quick suppression response to wildfires in the conifer fuel types on the Forests makes the difference between a small fire and a large destructive fire. Monitoring of initial attack success of holding fires to low acres burned is done to judge suppression effectiveness.

Recommendations

Continued emphasis on vegetation management activities approved in the 2006 Forest Plan will continue to move the Forests to condition classes that reflect pre-settlement conditions.

Fire Hazard Rating

What is the distribution of National Forest System acres by fire hazard rating? How many acres in fire dependent ecosystems and at-risk urban-rural interface and intermix areas have been reduced by at least one hazard rating class.

The priority for fuel reduction activities are high fire risk areas around improvements with value. Many of these areas are near public residences or seasonal dwellings on private property. Because of the preponderance of private land in-holdings across the Forest, many private land improvements have a high risk of damage or destruction from a wildland fire. These areas are identified in the National Environmental Planning Act (NEPA) process for priority treatment.

Hazard rating reduction takes place through vegetation management fuels treatments. In FY 2009 the Forests accomplished activities on 12,042 acres that lowered fire hazard rating. Monitoring through contract administration, and line officer involvement ensure objectives are being met. Prescribed burning, timber sales, mechanical treatments, and other vegetation management have combined to reduced wildfire hazard on the Forests and lessen the risk to Forests' employees and public. Vegetation management projects that reduced fire hazard are planned and tracked in the FACTS database.

Evaluation and Conclusions

The Forests do not measure hazard ratings per se, though fuel hazard reduction activities reduce the tons of fuel available to burn in wildfires. Fire suppression activities are almost always more successful when there is less fuel to burn in a wildfire. Hazardous fuel reduction projects are making a difference.

It will take many years of hazard reduction and condition class change to get the Forests back to pre-settlement conditions. The Forests have experienced wildfires that have burned up to or into areas that have had hazardous fuel reduction treatments, and in all cases fire behavior has lessened. This has allowed safer and more effective fire suppression.

An exception to a more natural condition class being less fire danger is the jack pine fuel type. Jack pine in its natural condition is regenerated with stand replacement fire approximately every 30 to 50 years. Through fuel breaks and Kirtland warbler harvest areas, the Huron National Forest attempts to mitigate large wildfire potential in this fuel type.

Recommendations

Current monitoring of prescribed burns, including photo points for fuel loading reduction, crown scorch, tree mortality, and ladder fuel reduction should be continued in the future. It should be recognized that effectiveness of hazardous fuel reduction activities on the Forests may only be evidenced after years of additional hazard reduction work. This will be evidenced in the lessening of negative fire effects and more manageable fire behavior of wildfire events that burn into treatment areas.

Inventory and Protection of Heritage Resources

How many archaeological and historic studies were initiated and completed? How the information was distributed, and did this information benefit National Environmental Policy Act analysis/project planning? Have heritage resources across the Forests been inventoried and protected?

Heritage or cultural resources are the remains of sites, structures, or objects used by people in the past. They may be recent or ancient in age and both archaeological and architectural in nature. Cultural resources are actual physical things such as places, buildings, artifacts, 'ecofacts', and documentary materials relating to the events and processes of a past way of life. The value of preserving significant cultural resources lies in the stories they can tell about past cultures, people's environmental relationships, and human behavior in general. Cultural resource values may be aesthetic, historical, scientific, and/or interpretive and are often dependent on the integrity (lack of disturbance) of the resource and its surroundings. Because of their large land base and relative isolation, National Forests preserve an important part of our nation's historic and cultural heritage.

Heritage resource management consists of activities designed to help conserve the nation's diverse cultural record and promote the public's understanding and enjoyment of that record. Based on the concepts of conservation and stewardship, the program is carried out under several statutory authorities, principally the National Historic Preservation Act. Section 106 of the Act addresses the potential for work projects to adversely affect the cultural record. Under Section 106, reviews and fieldwork are conducted to identify, evaluate, and protect, as needed, heritage resources from disturbing effects of a wide variety of actions from timber cutting to road reconstruction.

In meeting the mandates of Section 106, the Manistee NF conducted approximately 80 internal literature searches and field survey projects encompassing some 11,640 project acres in FY2009. Fifty-three new or previously recorded heritage properties were encountered during to the Forests' inventory. Approximately 38 sites received condition monitoring work. Information and recommendations resulting from this activity were incorporated into NEPA team analyses and records and carried through to project implementation as appropriate. Inventory records, including site and survey data, are maintained as paper files but selected information is increasingly included in GIS and other databases. In addition, volunteers devoted 72 hours, valued at $900, helping the Forests achieve their project inventory requirements.

Section 110 of the National Historic Preservation Act mandates a program of proactive stewardship and public involvement. Section 110 activities are supported by direct appropriation but portions of specific project funding can also be derived from non-Heritage budget allocations. Appropriated funds are often combined with contributions from partners and other cooperators. Highlights of FY 2009 Section 110 work include:

- Heritage specialist Cari VerPlanck coordinated the production of a fine quilt commemorating the centennial of the Huron National Forest. The quilt has been on display at our offices in Mio, Oscoda and Cadillac as well as the Alcona, Iosco and Ogemaw County Fairs. The quilt earned blue ribbon honors at both the Iosco and Ogemaw fairs. Cari also conducted oral history interviews with retirees during the centennial celebration day at Lumbermen's Monument and provided a program for visitors at the Eldorado CCC camp.

- The Cadillac News published a long interview with the forest heritage specialist about the archaeology of northern Michigan and the Forest Service's cultural resource management program. The article appeared in a supplement to the newspaper profiling the Cadillac-area community.

- The Forests also conducted an extensive oral history interview with John S. Crosby, a Forest Service retiree who was an early employee of the Chittenden Nursery. Mr. Crosby is also known for his work in forest fire research after World War II. The interview was conducted by Dr. Joseph Jones, then of Grand Valley State University. In 2010, the interview will be transcribed and made available to the Huron-Manistee National Forests and the Forest History Society.

Evaluation and Conclusions

The Forests are meeting Forest Plan direction for heritage resources in respect to NHPA Section 106 requirements. Better coordination of resource protection needs during initial project design and subsequent implementation by all parties continues to be a priority. Funding is needed to continue progress in addressing the Forests' curation needs and to minimally address new and challenging program target and accounting responsibilities.

It is recommended that the Forests continue to attempt to meet Forest Plan and Forest Service Manual direction for heritage resources, nominate effectively-documented properties to the National Register of Historic Places, develop a curation agreement with an in-State repository, if possible, and maintain our corporate national and local databases.

Volunteer and Partnership Opportunities

Identification of resource management opportunities enlisting volunteer organizations, individuals, and local communities which are self-enhancing. Integration of public involvement and regional and national forest management objectives.

Thanks to $470,400 in partner contributions, 36 individual projects were implemented on the Huron-Manistee National Forests in 2009. Projects supporting fisheries resources and watershed enhancements. Specific accomplishments included: 33 miles of streams/rivers and 154 acres of waterways improved, and another 20 stream/river miles and 1,330 acres of inland lands inventoried.

YCC Student, Megan Wheeler Conducts Fish Monitoring on Bigelow Creek

Some of the activities were undertaken to further Forest Plan 2009 objectives, including the use of biological and chemical control measures to combat invasive species on a 2,600 acre lake; placement of in-stream fish cover structures to enhance fish habitat; and the restoration of popular fishing sites with youth while instilling a sense of land stewardship and responsibility. Fish population monitoring was conducted throughout the Huron-Manistee NF. Monitoring was completed within sections of eight creeks: Cedar, Mena, Bigelow, Pine, Poplar, Fairchild, Peterson, Sickle and Silver Creek in addition to the Middle Branch of the Pere Marquette River, Pere Marquette River, and Little Manistee River. Fishing opportunities were enhanced by stocking sunfish or trout in eight inland lakes and two impoundments.

Bank stabilization and erosion control measures were completed on stretches of the Big Sable River. Aquatic habitat restoration efforts were implemented in Allen, Blood, Carlton, Cedar, Freeman, Little Henna, Bear, Gurney, Cool, Peterson, Poplar, Tank, Hinton, and Fairchild Creeks; Little Manistee, Big Sable, Manistee, and Pine Rivers.

Roughly 350 people participated in the Kids Fishing Day event at Nichols Lake, which is held every year in June. On-site for kids and adults to enjoy and learn from were interpretive displays for the Threatened Karner blue butterfly whose habitat lies within the Manistee NF; turtle and fish identification; educational materials about non-native invasive species; guided hikes; and fishing.

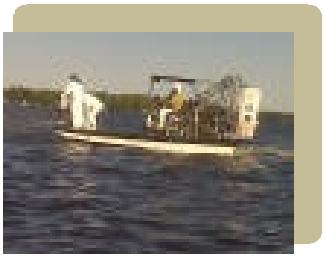
The continued success of our fisheries program would not be possible without the financial contributions and tireless volunteer hours of our partners that include Conservation Resource Alliance, Michigan Department of Natural Resources and Environment - Fisheries Division, Pere Marquette Watershed Council, Inc., USDI Fish and Wildlife Service, Little Manistee Watershed Conservation Council, Muskegon River Watershed Assembly, Muskegon Conservation District, Lake County Road Commission, Nichols Lake Association, National Wild Turkey Federation - Michigan, National Wild Turkey Federation - White River Longbeards Chapter, National Wild Turkey Federation - Pere Marquette, Bitely Better Conservation Club, Pheasants Forever, Trout Unlimited - Pine River, Wellston Boosters Association, Little River Band of Ottawa Indians, Pine River Association, Huron-Pines Resource Conservation and Development Council, Michigan Department of Environmental Quality, Ferris State University, Lake Mitchell Improvement Board, and Consumers Energy.

Volunteer monitoring activity for Karner blue butterfly by Forest Service personnel, individuals, and partners is discussed on pages 70 and 71.

Non-native Invasive Plant Species

To what extent are management treatments reducing non-native invasive species infestations and preventing new invasive species from becoming established, when possible.

Lake Mitchell Eurasian water milfoil.



The Lake Mitchell Improvement Board (LMIB) treated approximately 380 acres of Eurasian water milfoil (*Myriophyllum spicatum*) on Lake Mitchell with 2, 4-D, an EPA approved herbicide under permit from the Michigan DEQ's aquatic nuisance plant control program. An integrated pest management approach is being employed as 10,000 milfoil-eating weevils (*Euhrychiopsis lecontei)* were planted near the mouth of Mitchell Creek in early July. Samples of milfoil were taken in the fall to determine how effective the weevils have been. Preliminary results were encouraging and tests will continue in 2010. The Forest Service has a campground and boat launch on Lake Mitchell in the Big Cove area in the southwest portion of the lake.

Au Sable River garlic mustard

An infestation of garlic mustard (*Alliaria petiolata)* in riparian habitat below Foote hydro-electric dam on the Au Sable River was treated in 2008. No treatment occurred in 2009; however, additional treatment is scheduled for spring 2010. This will be a continuation of the partnership between Consumers Energy and the Forest Service. Approximately five acres will be treated through herbicide application. The objective is to contain the infestation so that it does not spread to adjacent National Forest system lands.

Loda Lake purple loosestrife

Purple loosestrife at Loda Lake was treated by hand clipping of flowering heads to prevent seed formation. Some smaller plants were pulled. The population will continue to need hand treatment for the next several years. While the large purple loosestrife plants have been eliminated through herbicide treatment, young plants are interspersed within desirable native vegetation that precludes an herbicide spray treatment.

Pere Marquette barberries

All barberries at Green Cottage on the Pere Marquette River were dug up and removed in 2009. All resprouts were herbicided later in the growing season. Monitoring will occur in 2010 and retreatment will occur as needed.

Lake Michigan Shoreline: spotted knapweed, houndstongue, Japanese barberry and Lombardy poplar

These four non-native invasive species were treated along the Lake Michigan shoreline to prevent them from negatively impacting Pitcher's thistle habitat. Spotted knapweed (*Centaurea stoebe*), Houndstongue (*Cynoglossum officinale*), Japanese barberry (*Berberis thunbergii*), and Lombardy poplar (*Populus nigra*) were treated multiple times for a total of 197 acres of treatments. Within Nordhouse Dunes Wilderness Area, 175 acres were treated, and 22 acres were treated within Lake Michigan Recreation Area.

Evaluation and Conclusions

The treatment of Eurasian milfoil in Lake Mitchell with 2, 4-D has been not as successful as hoped. However, a new integrated treatment proposal will be implemented in 2009. It will consist of an intensive grid survey to identify all areas of milfoil infestation. Two approaches will then be used to treat the identified milfoil areas: (1) stocking of milfoil weevils into two areas of known milfoil infestation (Big Cove and an area along the north shore); and, (2) spot treatment of the other identified locations of milfoil with the herbicide 2,4-D. It is hoped that stocked weevil areas will serve as a "nursery" area for the weevils to propagate and disperse to other areas of the lake over time.

The Forest Service entered into a Challenge Cost Share Agreement with the Lake Mitchell Improvement Board in 2008 to continue milfoil control and management. Not all Forest Service funds obligated in 2008 were expended, and the LMIB applied the balance toward weevil stocking for milfoil control in Big Cove in 2009. Although the majority of Lake Mitchell shoreline is in private ownership, National Forest lands in the southwest corner of the lake benefit from the treatment. This CCS Agreement will be updated in 2010 whereby the Forest Service will contribute additional funding that will be applied to more biological control methods (milfoil weevil stocking).

Treatment of garlic mustard along the Au Sable River was monitored in 2009 and it was determined that follow-up control measures are needed. The Forest Service entered into a Challenge Cost Share Agreement with Consumers Energy in 2008 and not all of the funds obligated were expended. The balance will be used for the purchase of additional herbicide if necessary for planned treatment in spring, 2010.

Non-Native Invasive Species – Strategy

To what extent is forest management contributing or responding to populations of terrestrial/aquatic non-native invasive species (NNIS) of concern? How has the national NNIS strategy been implemented on the Forests?

The Forests continue with timber sale contract requirements requiring cleaning and inspection of equipment. Prior to the movement to the next site the equipment will be cleaned. Other actions include seeding landings, sediment basin spoil sites, and other disturbed areas with native or non-persistent non-native species to minimize colonization by NNIS.

The National NNIS Strategy includes four elements: Prevention, Early Detection and Rapid Response, Control and Management, and Rehabilitation and Restoration.

1) Prevention

Prevention includes timber sale contract provisions requiring equipment cleaning in timber sale contracts; seeding in landings, sediment basin spoils sites, and other disturbed areas with native or non-persistent non-native species; and doing community outreach and education to decrease the likelihood that Forest visitors will introduce NNIS into the Forest.

2) Early Detection

Early Detection and Rapid Response have been addressed by working with several partners including the Northwest Michigan Cooperative Weed Management Association (CWMA), Michigan Dune Alliance, and Huron Pines Northeast CWMA to identify new NNIS infestations. The Forests' utilize seasonal employees and student interns to locate NNIS. A presentation is given during an early summer safety meeting to familiarize personnel with high priority NNIS. All field-going personnel are asked to report invasive plant species. NNIS locations are verified by botany staff and entered into the Natural Resources Information System (NRIS) NNIS database and analyzed for response strategy. In addition, botanists survey all areas proposed for future treatment or activities. Similarly, all NNIS finds are evaluated for response strategy and entered into the NRIS database if a treatment is determined to be part of the response.

3) Control and Management

Control and Management is achieved as resources are available. Partnering with two existing CWMA's is advantageous because of their ability to obtain grants. The Forests also work with volunteer groups teaching them how to identify NNIS and how to treat infestations on Forest Service and adjoining

property. Partnering with the Huron Pines Northeast CWMA, AmeriCorps is focused on eradicating three NNIS species along Lake Huron Shoreline.

4) Rehabilitation and Restoration

Rehabilitation and Restoration is accomplished by using native or non-persistent non-native species in rehabilitation of landings, sediment basin spoils sites, and other disturbed areas.

The Forests completed a Non-Native Invasive Plant Environmental Assessment and decision in 2009 which allows greater latitude in both where and how non-native invasive plants (NNIP) may be treated.

The Huron-Manistee NNIS list was updated to include 15 species and re-ranking of others, bringing the total number of treatable NNIS to 75.

NNIS presentations were given to local organizations to teach the public about NNIS and impacts to the forest.

The Forests have partnered with two Cooperative Weed Management Areas to help coordinate NNIS education and control. One CWMA covers a three-county area in Northwest Michigan and the other covers the Lake Huron shoreline and adjoining ecosystems in five counties in northeast Lower Peninsula.

Our goal is to follow the national strategy where the least widespread NNIS are treated first unless there is a site specific goal of ecological restoration. We also require equipment cleaning clauses in timber contracts. We have started to include treatment within project EAs.

All populations which receive treatment are evaluated and monitored for effectiveness and retreatment needs during the current year and for the following year.

We monitor timber harvest landings for NNIP after timber sales are concluded. In FY 2009 we monitored 388.5 acres of NNIP treatments, or 67.5% of the areas that had previously been treated.

We are mostly in the mapping/inventory phase. Most of our inventory is related to project level surveys.

Evaluation and Conclusions

The Forests are doing what they can to control NNIS. The strategy is slowly being implemented. With the more recent NEPA herbicide documentation and decision, we will become more effective at implementing the treatment part of the strategy. In terms of area infested, we expect an increase despite treatment. New areas are expected to be mapped faster than treatment can take place. Due to funding/time constraints, monitoring will be conducted only at treated sites. Future assessment of total infestation will depend on properly entering re-measurements into the NRIS database and filtering out older pre-treatment records.

Non-Native Invasive Species – Treatment

What percent of NNIP sites and acres have been treated, and how effective was the treatment?

Very little of NNIP populations have been treated. In FY 2009, the Forests completed 189 separate activities treating NNIP covering 643 acres. Cooperative agreements and expansion of the program with partnerships for treatment will be a big plus to areas of the Districts. Treatments have had varied results. While the percent mortality is high for most herbicide treatments, there is still a long time needed for repeat (annual) treatment due to the seed bank, and length of seed viability. Hand weeding has also shown a positive impact on NNIP presence in several recreational/administrative sites; however, again continued annual treatment activity needs to persist. In 2009, several significant populations of garlic mustard were discovered at recreation sites, and several large populations of leafy or cypress spurges were discovered in habitat of the Endangered Karner blue butterfly. Discovery of the vastness of nearby leafy spurge populations in one of the habitat areas has necessitated that the District begin actions to introduce biocontrol to the site. Treatment capacity is expected to continue to improve, but will not begin to address all of the NNIP locations. The approach of Early Detection, Rapid Response for newly introduced NNIP species, and treatment of NNIP in high quality and high-risk-for-spread sites will continue to allow the Forests to concentrate on the top tier of the NNIP infestations, still at less than 1 percent.

Garlic mustard hand pulling is accomplished prior to or during flowering to prevent additional seed entering the seedbank. If NEPA has been completed, then herbiciding takes place. For new native plant seeding restoration sites, handweeding is done annually for each site to keep NNIP from becoming established. In some cases, where needed, additional herbiciding may be done for species such as leafy spurge, which cannot be treated by handpulling. For NNIP shrubs, (honeysuckles, barberries, and autumn olive) young stems are hand pulled. Larger plants are treated with either a cut-stem herbicide application, are pulled out with mechanical equipment, or have basal bark herbicide applied. Leafy and cypress spurge have been treated with hand spraying of glyphosate. The Forests will soon locate insects approved for spurge biocontrol.

Garlic Mustard

Purple Loosestrife

Purple loosestrife is hand-pulled while small, flowering stems are cut several times throughout the flowering period in an area where numerous seedlings emerge following herbicide application to large plants. Young plants are intermixed with healthy and diverse native plant populations and it would be damaging to native plants to spray the loosestrife. Wicking of individual loosestrife young plants will be tried in 2010.

Treatment methods include girdling Lombardy poplar; cutting and removing phragmites; hand-pulling garlic mustard, common burdock, common St. John's-wort, spotted knapweed, Canada thistle, bull thistle, and hounds tongue; mowing spotted knapweed, smooth brome, and hoary alyssum; using herbicide on spotted knapweed and Japanese knotweed; and ripping out non-native bush honeysuckles and autumn olive with weed wrenches.

Applications included the use of glyphosate and/or Triclopyr via a backpack sprayer. Targets were almost all broadleaf herbaceous species such as knapweed, spurge, St. John's wort. Visual assessments were conducted after treatments to determine if follow-up applications or additional treatments would be required.

All treatment sites are monitored by visual observation each year, remapped if necessary, and evaluated for treatment activities needed the following year. Mio and Huron Shores Districts will continue to judge via GPS tagged digital photos.

Evaluation and Conclusions

HMNFs' Districts are trying to expand their staff's knowledge and experience with treatment methodologies. Staffing was increased in 2009 with the assignment of NNIP treatment to the duties of a staff person on one district in addition to the botanist's activities. The Districts are becoming more proficient and able to expand in the area of NNIP treatment.

Funding and lack of personnel continue to be the biggest issue with dedicated control efforts. Every year, new infestations and new species to treat are found in addition to sites that have been undergoing treatment. There are also more sites to monitor for the efficacy of the previous year's treatments. The cumulative effect of more work to do and increasingly less time to devote to it,

as we are expected to do more with less every year limits progress. As targets increase, no new personnel have been devoted to achieve those targets.

Recommendations

Devote more funding and personnel to NNIP control and monitoring without increasing targets until the Forest can catch up with the identified work needing to be done. The Forests may try some quantitative measures of effectiveness for contracted applications. For Force Account applications, we may continue to assess visually and enter results into FACTS and NRIS as a NNIS monitoring activity.

Effects of Off-Road Vehicles – NNIS

What are the effects of off- road vehicle use on the spread of Non-Native Invasive Species (NNIS)?

The greatest area of NNIS introduction and spread occurs in two locations: roadside and at recreation sites. Roadside introductions rapidly become corridors of NNIS due to continued roadside edge disturbances. Off-Road Vehicles traveling along an infested roadside corridor introduce NNIS further into the Forest as they travel off-road. In addition, they create ground disturbance by this travel, which makes likelihood of infestation greater. We do not have the monetary resources to specifically track ORV NNIS infestations. Monitoring is not being conducted to determine how off-road vehicles impact the spread of NNIS. Sampling only occurs as a result of a larger project which encompasses areas of ORV transit. In such cases, NNIS populations are noted in a vegetation survey and entered into the project record. If the NNIS occurrence includes species ranked 1 – 3 for the Forest risk ranking, then treatment is proposed during the project NEPA.

The Forests priorities are to treat high-priority NNIS species and high-priority lands/landuse areas. With our staffing, we currently are not able to treat all of our highest priority lands or higher ranked NNIS species. We should target trails for monitoring, but thus far our knowledge of NNIS at these sites has been incidental to project level inventories.

Evaluation and Conclusions

While Off-Road Vehicle spread of NNIS does exist, it is not the top-ranked area of concern for NNIS on the Districts. At this point in time, funding only allows for the top ranked areas of treatment of high risk areas or highest concern NNIS species. This is not to say that ORV introduction and spread of NNIS is unimportant to the Districts, but that it is currently beyond the capacity of the Districts to respond.

In some sites, particularly where trails meet the road, NNIS appear to be spreading along trails, suggesting ORV as vectors and/or NNIS habitat providers. Otherwise, many trails have cut into adjacent vegetation so recently that very little transition exists between trailhead and undisturbed vegetation.

Land Ownership – Adjustments through Purchase, Exchange, Transfer Interchange, Boundary Adjustment, and Donation

To what extent has the Forests' land base been adjusted through purchase, exchange, transfer interchange, boundary adjustment, and donation? What land conveyances, purchases, or exchanges have occurred to: protect T&E or RFSS species, increase public ownership on lakes and rivers, or acquire lands with unique ecological, scientific heritage, recreational qualities?

We continue with the Forests' land adjustment program of purchases, exchanges, and accepting donations to meet goals of the 2006 Forest Plan. Land adjustment goals set out in the plan are to acquire lands needed to protect Endangered, Threatened and Sensitive species, increase the amount of wetlands, water frontage, and areas possessing unique natural environments or cultural resources.

In Fiscal Year 2009, two land ownership adjustment cases were completed.

- Purchase of 75 acres using Land and Water Conservation Fund dollars.
- 19 acres acquired through a Land-for-Timber exchange.

The purchase resulted in acquisition of 75-acres of land that is part of a black bear travel corridor within 3 miles of the City of Cadillac, Michigan. The corridor is part of a larger cooperative black bear study area with the Michigan Department of Natural Resources and Environment and the Forest Service. This purchase, along with previous acquisitions in the area, (including a large 134-acre donation), have added to the black bear travel corridor and National Forest System lands. The 75-acre purchase is a critical addition to the black bear corridor and helps prevent the potential conversion of woodlands and other natural ecosystems to residential uses thereby conserving open space (Goal 3, Objective 3.1 of Forest Service Strategic Plan for FY 2007-2012).

The land-for-timber exchange resulted in acquisition of 19-acres of critical habitat for the federally-listed Endangered Karner blue butterfly. The newly acquired 19-acres are within the existing Loda Lake Semi–primitive Motorized Area and within the Newaygo Recovery Unit identified in the Karner Blue Butterfly (KBB) Recovery Plan. The acquisition will improve the Forests' ability to implement habitat restoration plans for KBB and contributes toward accomplishment of the Forest Plan Desired Future Conditions. The acquisition will improve the Forests' ability to implement ecosystem management objectives in this area. The acquisition eliminated the need for surveying and marking 1-mile of boundary line, saving the Forest Service approximately $2,800 at current survey costs. The acquisition meets several goals of the FY 2007-2012 Strategic Plan – Goal #1 Restore, sustain and enhance the Nation's forest and grasslands and Goal #3 Conserve open space.

In FY 2009, the Forests acquired two Licenses for access across non-federal land in support of Federal timber sales. The Licenses are short term in nature (5-years each) and cost the Forest Service $1.00 each, paid to the non-federal landowner.

Nine title management cases were resolved forest wide.

We continue to submit annual reports to the Regional Office on the land adjustment cases completed.

Evaluation and Conclusions

Over the last few years (3+) there have been fewer land ownership adjustment cases completed. This is a result of several factors, primarily: a decrease in available purchase dollars, increased competition among agencies for purchase dollars and more stringent environmental laws and regulations in case processing.

The Forests receive many more land ownership adjustment proposals than current budgets and staffing can accommodate. These proposals are from non-federal landowners offering to either sell their land to the Forests, or consolidate NFSL through exchange. As these new opportunities for land adjustments are presented, the Forests continue to prioritize projects and emphasize cases that provide restoration or conservation opportunities, improved public access for recreational purposes, increase management efficiency through land ownership consolidation or resolution of real property encroachments. While screening and prioritization may result in fewer cases being initiated compared to the opportunities presented, it ensures that Forest Plan objectives and Agency goals are addressed and met.

Several land adjustment cases are in progress and the Forests continue to work toward their completion. These include, among others, a 40-acre donation of critical habitat for a federally-listed Endangered species (Kirtland's warbler) and two (2) land-for-timber exchanges (totaling 120 acres) that will consolidate NFSL ownership and eliminate the need for surveying and marking 2.5 miles of boundary line. This will result in a savings for the Forest Service of over $18,000 at current survey costs.

Beginning in FY 2010, the Forests will report all land adjustment accomplishment data utilizing the Land Adjustment Data System (LADS). This system will provide all Forests with the ability to compile and manage information related to the status of land adjustment cases. The system will also serve as the reporting source of record for all adjustment related performance measures. LADS can be accessed at the following web site: http://fsweb.dv.r5.fs.fed.us/lads.

Minerals – Environmental Protection and Utilization in Leasing and Permits

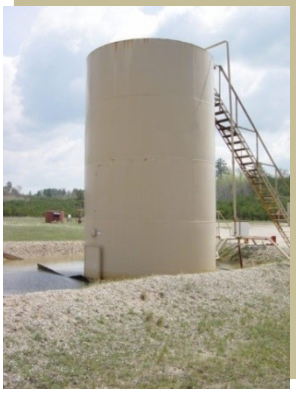
Are lease stipulations and permit conditions ensuring sound environmental protection and resource utilization?

Mineral ownership lying within the boundaries of the Huron-Manistee National Forests includes Federal, State and private mineral interests. Lease rights granted differ for each type of ownership, and the degree of control and authority over leasing and subsequent surface use also varies. Using applicable Federal and State regulatory controls, Forest Plan standards and guidelines, and negotiating terms and conditions of surface use with operators on private minerals, the Forest Service ensures that mineral leasing and development are accomplished in a manner that is consistent with Management Area direction. If the mineral ownership is Federal, the leasing agency is the U.S. Department of the Interior, Bureau of Land Management (BLM). BLM cannot lease over the objection of the Forest Service and the Forest Service has the authority to restrict surface use as deemed reasonable and necessary to protect surface resources.

Producing oil and gas wells and production facilities are inspected at least once per year. Drilling operations are inspected as frequently as necessary to ensure compliance with operating conditions or applicable regulatory controls. Inspections are conducted to validate that stipulations (i.e., Forest Plan Standards and Guidelines) and/or operating conditions are followed, and that protection measures are effective in protection of resource values. In FY 2009, the HMNF administered 40 sites to standard. These sites included producing wellsites, production facilities and drilling activity.

Processing of lease applications and drilling permit applications is done in a manner consistent with direction provided by the Forest Plan. The Forest Plan identifies those federal minerals which are available for leasing and specifies applicable lease stipulations. The HMNF incorporated mandatory regulatory requirements regarding mineral availability decisions into the 2006 Forest Plan (March 2006). In FY 2009, the

Forest identified approximately 5,400 acres of federal mineral ownership as available for Federal leasing. This acreage was subsequently offered for competitive leasing by the BLM. The State of Michigan requests the Forests' recommendations on lease stipulations when leasing State minerals under National Forest System lands (NFSL). The HMNF identifies which State lease stipulations are applicable and ensures comparable protection to that found when leasing Federal mineral estate. In FY 2009, we reviewed approximately 260 acres of NFSL to identify necessary lease stipulations on lands with State mineral interest. When private mineral rights under NFSL are leased, the Forest negotiates reasonable and necessary surface use conditions with oil and gas operators at the time development is proposed. We rely, to a large extent, on State regulatory controls to ensure resource protection. Close cooperation with the Michigan Department of Natural Resources and Environment, Office of Geological Survey (OGS) during processing of drilling permit applications ensures that needed mitigation measures are applied consistently by all applicable regulatory agencies.



Evaluation and Conclusions

The Forest Service's authority to control or regulate mineral activity on National Forest System lands is dependent upon ownership of the mineral interest. Operations occurring on Federal mineral interest are generally more consistent with 2006 Forest Plan direction due to the fact that: 1) we have the ability to provide necessary lease stipulations for inclusion in issued Federal leases, and 2) we (Forest Service and Bureau of Land Management) have more regulatory control over operations. That is not to say that sites on state or private minerals are not regulated or maintained. Again, close cooperation with the state Office of Geological Services (OGS) during processing of drilling permit applications ensures that needed mitigation measures are applied consistently by all applicable regulatory agencies. When on-the-ground concerns arise, the Forests cooperate with the OGS to address potential issues or problems. We foresee that this cooperative relationship will continue in the future, thus enhancing our ability to ensure necessary resource protection measures are implemented.

Recommendations

Maintain and improve coordination with the Michigan Department of Natural Resources and Environment, Office of Geological Services during all phases of the state permitting and inspection process.

Continue to monitor mineral leasing and development activities on National Forest System lands. Ensure the level of current development is within the foreseeable development scenario described in the 2006 Forest Plan.

Continue to make Federal mineral interest available for leasing and development according to Federal and agency minerals program policy statements. Identify and require application of necessary 2006 Forest Plan standards and guidelines as lease stipulations on future Federal oil and gas leases.

Continue regular inspections of existing oil and gas operations to ensure compliance with lease terms and approved surface use plans of operation.

Wilderness Management

Is Nordhouse Dunes Wilderness being managed in accordance with the commitments associated with its designation?

In a major step toward restoring the Nordhouse Dunes Wilderness on the Huron-Manistee National Forest to a more natural condition, Great Lakes Energy removed an electrical powerline through the eastern half of the wilderness. The Nordhouse Dunes Wilderness is the only wilderness in the lower peninsula of Michigan. It is known for its beautiful view of the Lake Michigan shoreline and large sand dunes.

The area was designated a wilderness in 1987 with the passage of the Michigan Wilderness Act. Prior to designation, the area was heavily impacted by the use of dune buggies and previous developments.

The powerline in the Nordhouse Dunes Wilderness was installed in 1976 to provide electrical service to the Lake Michigan Recreation Area campground and local residences. The Michigan Wilderness Act recognized the right of Great Lakes Energy to maintain the electrical line in the Michigan Wilderness Act.

The Forest Service, in cooperation with Great Lakes Energy, researched options to relocate the line to move the wilderness toward a more natural condition. Great

Lakes Energy relocated the electrical line outside of the wilderness area. Crews removed the electrical line improvements and hiked the electrical line out on foot.

Vegetation before removal of the electrical line

Vegetation after removal of the electrical line

Evaluation and Conclusion

Completion of this project is a major step toward restoration of the area to a more natural condition.

Recommendations

Continue efforts to enhance wilderness characteristics of Nordhouse Dunes Wilderness.

Effects of Street-legal Off-road Motorized Vehicle Use on Trails, Routes, and Roads

What are the demand, supply, and trends of visitors using motorized vehicles, both off-road and street-legal? How many miles of trails, routes, roads, and acres of area have been designated open? Are trails and roads being maintained to safe standards?

Huron-Shores and Mio Ranger Districts on the Huron National Forest published their first Motor Vehicle Use Map (MVUM) in March 2008. Baldwin-White Cloud and Cadillac-Manistee Ranger District on the Manistee National Forests published their first maps in September 2009. All maps will be republished each year in March.

Evaluation and Conclusions

The majority of the Huron-Manistee National Forests' transportation system is currently in place and supports a system of Forest roads and trails that are open to OHV and highway-legal vehicle use, (354d, book 1 page 249, Forest Closure Order No. 5300/04/02/05 signed 6/13/2002). The 2006 Forest Plan sets desired conditions, goals and objectives that maintain a "closed unless designated open" policy for OHV travel; allows for a moderate level of increased OHV route development primarily focused on creating loops and connections between existing roads, trails and facilities; and continues the prohibition on cross-country motorized vehicle travel.

Huron-Manistee National Forests

Table 29. Huron-Manistee National Forests Recreational Transportation System.

Ranger District	National Forest System (NFS) Acres	Date of First Publication of Motor Vehicle Use Map (MVUM)	Existing NFS Roads including Administrative use only roads and other jurisdiction	Existing National Forest Jurisdiction Roads only OPEN To Highway Legal Motor Vehicle Use	Existing NFS Trails and Routes Open To Motor Vehicle Use less than 50 inches (not including motorcycle only trails)	Existing NFS Trails Open To Motorcycle only (single track)	Existing NFS Trial and Routes open to Snowmobile from Dec 1 to March 15	Acres in Areas Designated open for motor vehicle (Bull Gap Hill Climb)
Baldwin-White Cloud	300,680	Sep-09	780	656	76	98	193	0
Cadillac-Manistee	239,127	Sep-09	1,000	682	0	44	142	0
Mio	211,276	Mar-08	785	544	180	28	302	4
Huron Shores	226,984	Mar-08	780	565	46	0	203	0
Total	978,067		3,345	2,447	302	170	840	4

Table 30. Motorized Recreational Opportunities on the Huron-Manistee National Forests.

ACTIVITY	AVAILABLE
OHV less than 50 inches wide	302 miles designated trail and 4 acres of Bull Gap Hill Climb Area (must have state ORV sticker) prohibited anywhere off designated trail or route (Forest Closure Order No. 5300/04/02/05 signed 6/13/2002 and 2005 Travel Management Rule)
Snowmobile	840 miles designated trails or routes (must have state snowmobile sticker) prohibited anywhere off designated trail or route (Forest Closure Order No. 5300/04/02/05 signed 6/13/2002 and 2005 Travel Management Rule)
Driving for pleasure (Highway legal motorized vehicles)	2447 miles of National Forest System roads (must be highway-legal and have Secretary of State license); prohibited anywhere off designated trail or route or roads (Forest Closure Order No. 5300/04/02/05 signed 6/13/2002 and 2005 Travel Management Rule)
Motorcycle (single track)	170 miles designated single-track trail, if street legal 2447 miles of National Forest System roads (must have state sticker and/or highway license) prohibited anywhere off designated trail or route or roads (Forest Closure Order No. 5300/04/02/05 signed 6/13/2002 and 2005 Travel Management Rule)

Literature Cited

Altenritter, M, C.R. Ruetz, and K. Smith. 2010. Reproductive status and juvenile ecology of lake sturgeon in the Muskegon River. Michigan Chapter of the American Fisheries Society Annual Meeting, February 24-25, 2010, Grayling, Mi (abstract only).

Baker, E. A. 2006. Lake Sturgeon Distribution and Status in Michigan, 1996–2005. Michigan Department of Natural Resources and Environment, Fisheries Technical Report 2006-4, Ann Arbor.

Carlson, R.E. 1977. A trophic state index for lakes. Limnology and Oceanography, Vol. 22, No. 2., pp. 361-369.

Chiotti, J.A., J.M. Holtgren, N.A. Auer, and S.A. Ogren. 2008. Lake sturgeon spawning habitat in the Big Manistee River, Michigan. North American Jour. Fish. Mgmt. 28:1009-1019.

Dunn, H.L. 2000. Development of strategies for sampling freshwater mussels (Bivalvia: Unionidae). Pp. 161-167 in Proceedings of the First Freshwater Mollusk Conservation Society Symposium, Ohio Biological Survey.

Lyons, J., L. Wang, and T.D. Simonson. 1996. Development and validation of an index of biotic integrity for coldwater streams in Wisconsin. North American Journal of Fisheries Management 16:241-256.

Mann, K., M. Holtgren, and N. Auer. 2007. Habitat selection by juvenile wild and reared lake sturgeon in the Big Manistee River, Michigan. Proceedings of the 68th Annual Midwest Fish and Wildlife Conference, Madison, WI (abstract only).

Michigan Department of Natural Resources and Environment. 2010. Biological survey of the lower Muskegon River watershed, July – September, 2006. Staff Report, Water Bureau. Lansing, MI.

O,Neal, R.P. Muskegon River Watershed Assessment. Michigan Dept. Nat. Res. and Environ. Fisheries Special Report 19, Lansing, MI.

Schnurer, K.M. and B. Stuber. The occurrence of channel darters (*Percina copelandi) in* known locations in the Pine River system on the Huron National Forest, Michigan. Poster Presentation at the 68th Annual Midwest Fish and Wildlife Conference, Madison, WI.

Wang, L., J.L. Lyons, P. Kanehl, and R. Gatti. 1997. Influences of watershed land use on habitat quality and biotic integrity in Wisconsin streams. Fisheries 22(6):6-12.

Circa 1965

2008